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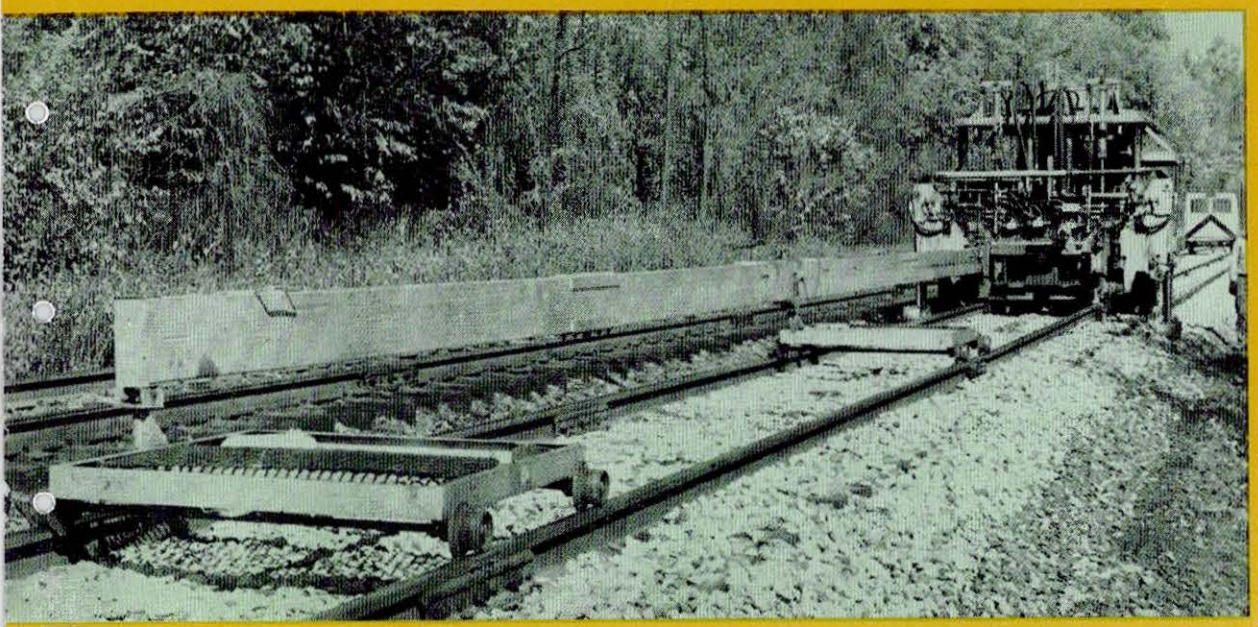
The civil engineer: Key man in railroading's new era p. 19

December 13, 1965

RAILWAY AGE WEEKLY



CODED RAIL ACTUATES TAMPER

p. 16

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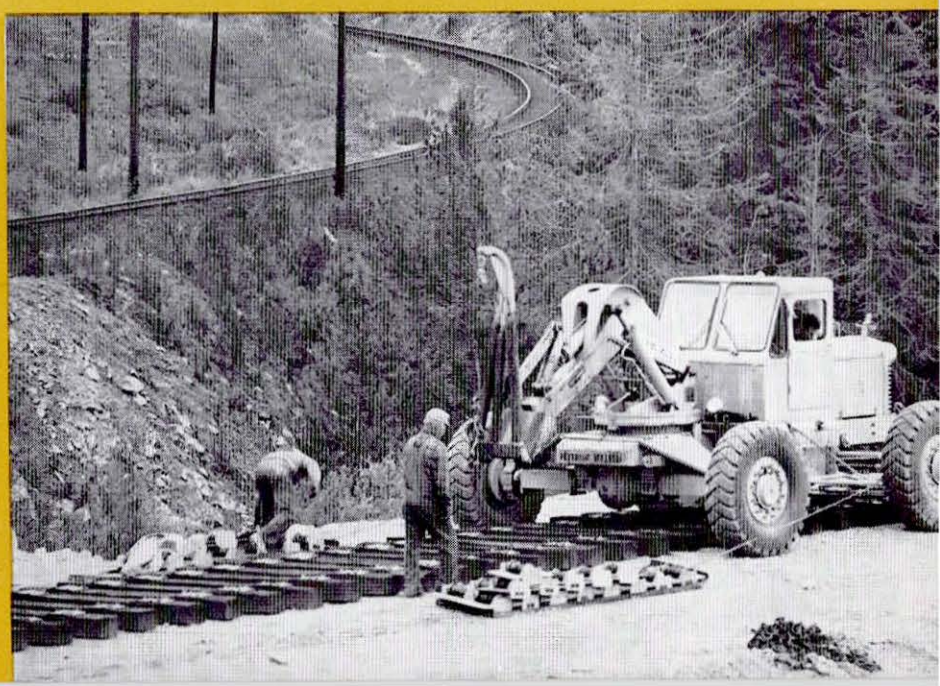
COSTLY LINE CHANGE PAYS OFF

p. 22



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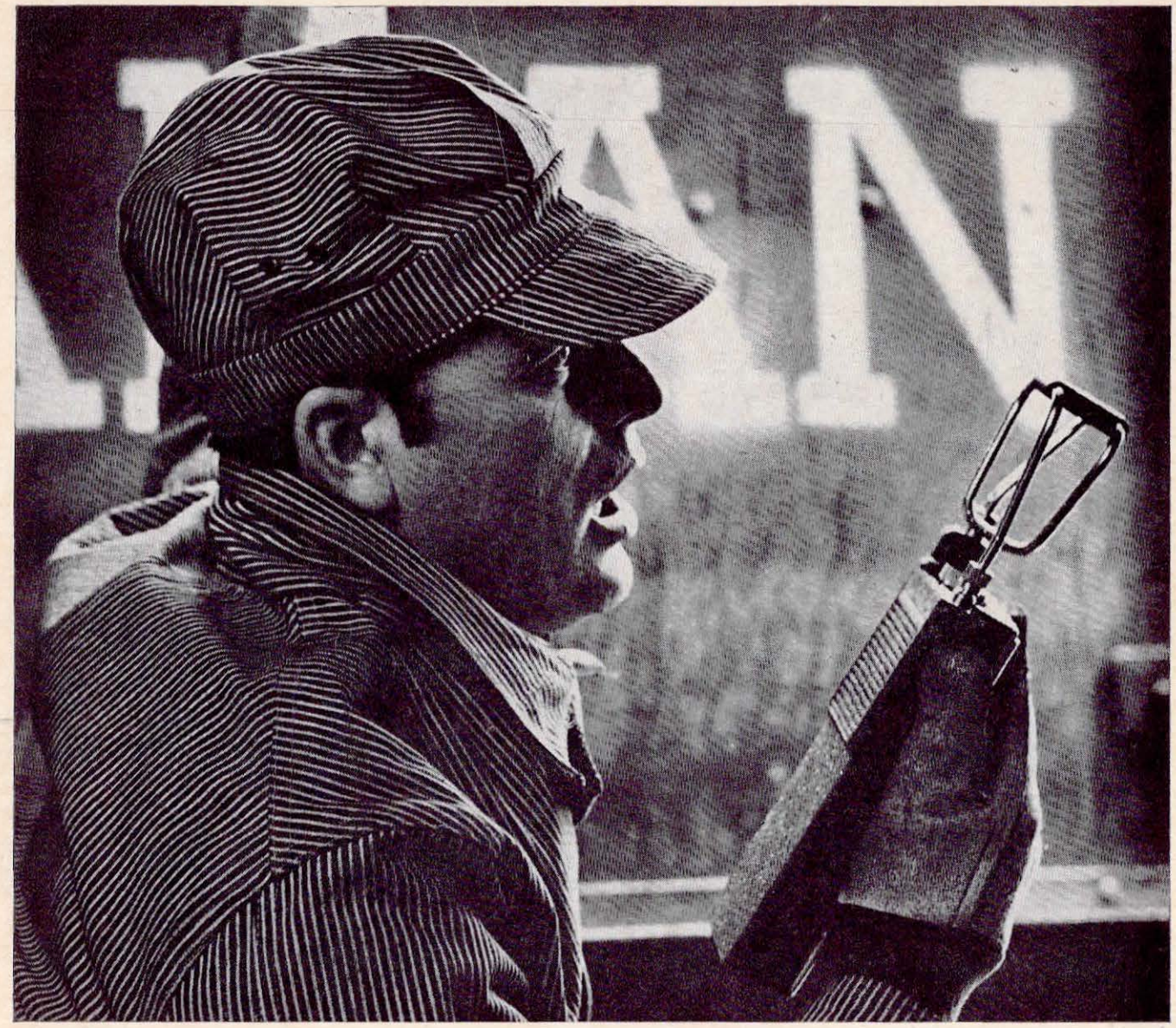

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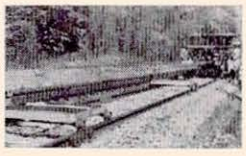
RAILWAY AGE WEEK AT A GLANCE

December 13, 1965 • Vol. 159, No. 23

FRB action won't affect rail spending

Financial men see the change in the discount rate as a good move, say it won't cut '66 budgets **p.11**



How coded rail actuates tampers

A new magnetized-code-mark system speeds tamper production **p.16**

Key man on today's railroads

The role of the civil engineer is described by SP President Biaggini **p.19**

Costly line change pays off

NP's new line, with no clearance problems, permits high-speed operations **p.22**

Big cars pose big problems

But customers demand them, so the maintenance challenge must be met, agree Boston panelists **p.30**

The Action Page: The need for realistic M/W programs

Here's a searching analysis of the varying railroad attitudes toward maintenance expenditures **p.50**

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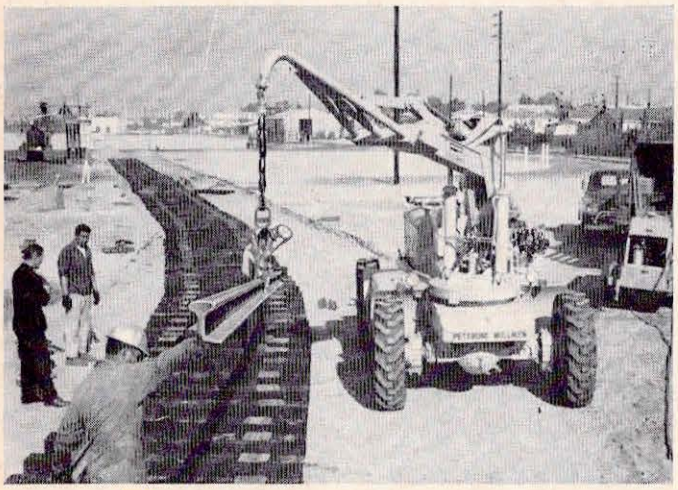

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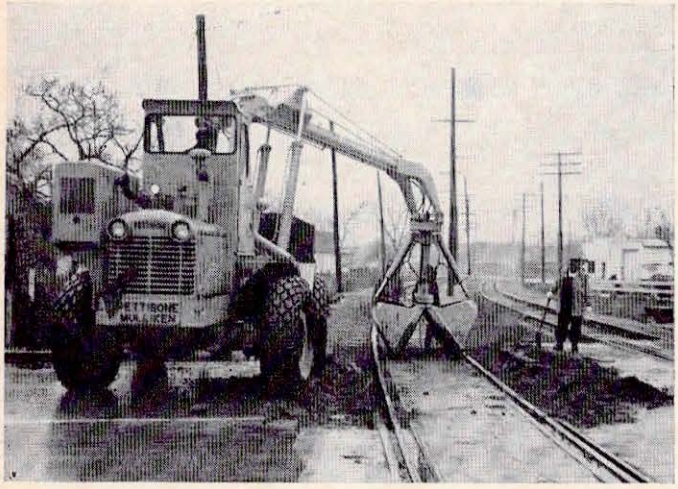

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SHORT AND SIGNIFICANT

Railroad capital outlays now put at $1.68 billion

The Department of Commerce has again revised its estimate of 1965 capital expenditures by railroads—and again the revision is upward. The new estimate: $1.68 billion—19% ahead of 1964's $1.41 billion, which itself was an all-time high. An earlier Commerce survey indicated railroad spending would total $1.63 billion (RA, June 14, p. 7). What about 1966? Commerce has no projection yet for the full year—but first-quarter 1966 outlays are estimated at $400 million—compared with $390 million in first-quarter 1965.

●

ORC&B wins elections on GTW and MoPac

Important representational elections were won by the Order of Railway Conductors & Brakemen on Dec. 3 and Dec. 7. In both cases the challenger, and the loser, was the Brotherhood of Railroad Trainmen. ORC&B's Dec. 3 victory came on the Grand Trunk Western; the Dec. 7 win was on the Missouri Pacific's Gulf Coast Lines. The elections, said ORC&B President George H. Harris, "indicate the desire of all road train service employees to retain their own democratic organization." He said the results "further indicate the fallacy of the Trainmen's organization in forcing these costly representational disputes . . ."

●

Alton & Southern: From Alcoa to Cotton Belt?

Alton & Southern may be headed for new ownership, the ICC willing. The St. Louis-area switching and terminal line is now wholly owned by Aluminum Company of America—but Aloca and Cotton Belt have apparently reached agreement on sale of the property, and indications are that a petition covering the transaction may be filed with the Commission within a few weeks. Cotton Belt, a Southern Pacific subsidiary, is also one of the owner-lines of the Terminal Railroad Association of St. Louis—which, at one point, had itself been conducting a feasibility study on possible acquisition of A&S (RA, Aug. 9/16, p. 7).

●

GATX to survey 'RRollway' prospects

Two independent studies, combining motivational research and traffic surveys, have been launched by General American Transportation Corp. to determine the habits and desires of the present and future traveling public. The studies are part of a "total effort" being made by GATX in developing "RRollway", its proposed 150-mph rail-auto ferry (RA, Sept. 28, 1964, p. 44). The studies, says GATX, "are the first of their kind to be sponsored by a private corporation to predict the public's acceptability of an advanced transportation concept not in use today."

●

Milwaukee wants to serve new agricultural area

Two new branch lines will be built by the Milwaukee Road in the Columbia Basin area of Washington if the ICC gives an okay to petitions submitted by the railroad Dec. 8. One line would run 6.4 miles, the other 22.5 miles. Both would serve areas which have been or will be brought into agricultural production through irrigation projects. Marketing of the crops involved requires establishment of rail-served processing, packing, freezing and storage plants near the producing areas, and Milwaukee President W. J. Quinn said indications are that such facilities will be located on the routes proposed by his railroad. In addition to filing its own branch-line petitions, the Milwaukee has intervened in opposition to a Northern Pacific proposal to build a new line into one of the areas which the Milwaukee wants to serve.

MONDAY MORNING REPORT

Engineer training—the fight's on, openly

The lines are being drawn—and pretty clearly—for the next skirmish in the battle of the firemen. And the lines on paper thus far seem to be pointing toward situations which could involve another exercise of outside power to resolve the conflict. In basic positions, neither the railroads nor the Brotherhood of Locomotive Firemen & Enginemen have moved from positions occupied before Public Law 88-108 put the case to arbitration and produced an enforceable settlement. And now, too, the dispute has been broadened, formally. Argument over the training of future engineers has come into the open—as had been forecast (RA, Sept. 27, p. 8).

The BLF&E makes its move—and hits trouble

One of the three proposals made by the BLF&E in notices served in mid-November is titled "Standards of Apprenticeship for Locomotive Firemen"—but the program called for is a training course for locomotive engineers. And both the railroads and the Brotherhood of Locomotive Engineers have individually committed themselves to fighting such a plan. The carriers, in replying to the BLF&E uniform notice, are putting it bluntly: The Firemen are trying to bargain for and obtain benefits for employees they don't represent; and the union's notice is proposing creation of a new craft or class of employees and would improperly influence the designation of the bargaining agent for certain crafts or classes.

From the Engineers—a threat of court action

The BLE puts it even more strongly. The Engineers are threatening to go to court if any railroad should work out an apprentice-engineer program with the BLF&E. BLE Grand Chief Perry S. Heath says it this way, in letters to the presidents of carriers whose engineers are represented by his organization: "If . . . recognition should be given the BLF&E in regard to negotiating agreements concerning apprentice locomotive engineers by your railroad on which the BLE is the duly designated representative of the craft of locomotive engineers, or if an attempt should be made to enter into an agreement with the BLF&E in regard to this subject, the organization will enforce its statutory rights through appropriate legal measures."

A gamble and a loss?

In one respect, the Engineers gambled and lost on their initial handling of training proposals—but the "loss" may be somewhat less than real. The BLE had promised to try to work out an apprentice program covering Illinois Central if it won the right to represent IC's firemen. While the contest was under way, little more was said about the plan. But the BLF&E won the election and, just a week later, unveiled—in detail—its own training proposal, as contained in the Section 6 notice.

The BLE moves ahead—and makes it public

Now, the BLE has been nudged into a position where it feels obliged to explain what's happened thus far. Grand Chief Heath confirms that his organization has been discussing training with top carrier negotiators "for several months . . . [and] a tentative agreement has been reached fully outlining the necessary points for the program." In short, the BLE seems to be prepared both offensively and defensively: It's negotiating toward the establishment of a training plan; and it's ready to file suit to block any training agreement negotiated with the Firemen. Under the circumstances, then, the odds appear to be running rather heavily in favor of the BLE if an engineer-training program is, in fact, to be set up.

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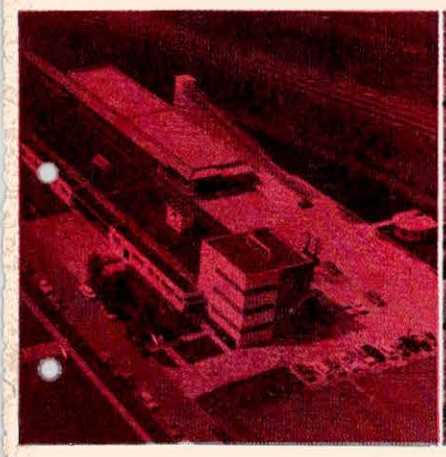

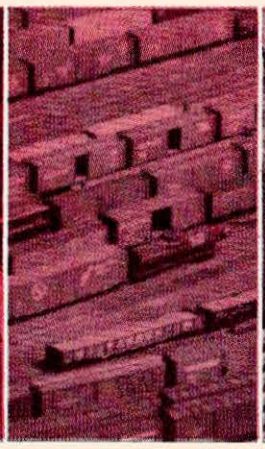

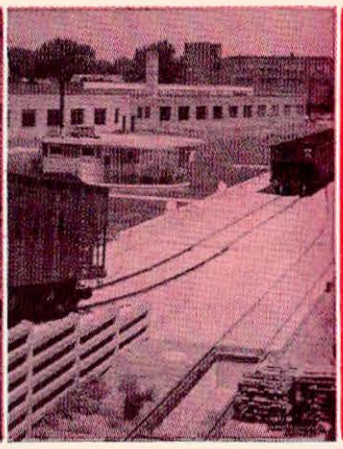

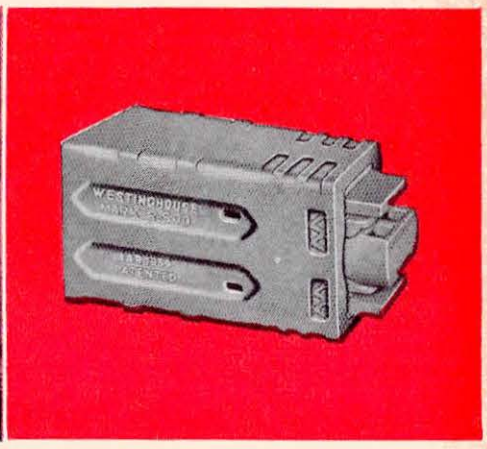

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RAILWAY AGE WEEKLY

DECEMBER 13, 1965

FRB's action won't affect rail spending

WHAT HAPPENED: The Federal Reserve Board boosted the discount rate to its member banks from 4% to 4.5%.

HOW RAIL EXPERTS ASSESS IT: They see the move as a healthy one, are standing pat on spending plans.

SILVER LINING: Railroads may actually reap a financial benefit from higher returns on their own short-term investments.

One could almost sense the pause early last week. Railroad men still working on 1966 capital-spending programs probably called their corporate financial officers, pencilled figures on scratch pads, then continued working on their budgeting of money for box cars, locomotives, rail and other necessary items in 1966. Railroads with completed capital-spending programs probably paused, too, for some "let's-see-now" figuring. Railroads, like almost everybody in the U.S. business community, were reacting last week to the various assessments being expressed about the Federal Reserve Board's boost of the discount rate to member banks from 4% to 4.5% on Dec. 5. And railroads, like most basic industries, were standing pat on 1966 spending plans.

Railroad planners didn't seem particularly upset by the Fed's action. After a long period of relative price stability, the price index of railroad purchases had started moving sharply upward in recent months. Many railroad financial experts felt FRB's action, if anything, was overdue. Said one bank economist who is a veteran in railroad finance: "President Johnson thinks he can keep the lid on prices by highly personal power plays—as he did with aluminum and copper—and by personal persuasion. But he can't. Predictable inflationary erosion of railroad capital budget money in 1966 is substantially higher than the somewhat less predictable additional money the Fed's action will cost railroads as they finance some of the capital acquisitions next year."

A prominent University of Illinois economist, William W. Tongue, who said the FRB's action will act as a "brake" and not a "break" for this most durable of all business booms, was taking part in one of the most public choosings of sides to hit the financial community in a long while. The highly publicized disagreement between LBJ and FRB Chairman William McChesney Martin, however, was tending to obscure the fact that both sides seem to agree on the need for heading off the inflationary pressures that are building up in the economy. The Administration, in effect, seemed to feel that the Fed's jacking-up of the discount rate was going to take too much of the bloom off the boom while most economists and industry financial experts were inclined to regard the move as a mild one at best.

- **FDIC gets into the act.** Some railroad treasurers last week were at least as interested in the fact that the Federal Deposit Insurance Corp., last Tuesday followed the Fed's action by raising the maximum interest rate on time deposits from 4.5% to 5.5%, the highest level for time deposits in several decades. Their interest was understandable. Railroads require large amounts of working capital and, at any given time, railroads have many millions of dollars out earning money in short-term investments. With banks authorized to pay a maximum of 5.5% interest on specified time deposits of more than 30 days, at least a few railroad financial officers feel their short-term placements will bring in enough extra cash to offset in part whatever higher financing charges the Fed's action may ultimately bring. "It all depends on the ratio of borrowings to working capital you can have out," noted one observer.

Experts in both railroad and railroad supply company circles seem to be siding with the Fed's view of how to reduce some of the speculative pressure behind the current upward drift of prices. The railroads are traditionally on the side of stable money, saddled as they are with an abnormally long cycle between earnings and the equipment-service-tariff configurations that take years to create—and change. The carriers, by and large, feel they have always been hurt in periods dominated by "easy money" politics and policy. And, like the Fed and many economists, carrier money experts have been feeling heating of the economy caused by the perceptibly quickening pace of prosperity and the even more inflationary pressures being generated by the sharply escalating war in South Viet Nam.

- **No effect on buying now.** What does it all add up to? One top-flight economist in the railroad industry does not expect the FRB's boost in the discount rate to have any significant effect

WATCHING WASHINGTON WITH WALTER TAFT

TAFT

• **THE ICC IS ACCUSED** by one of its members, Howard G. Freas, of having abandoned compliance with the 1958 Transportation Act's rate-freedom requirements. Basis of the Freas complaint is a recent decision in which, he says, the Commission "has come full circle" to resume its pre-1958 practice of "indulging in the arbitrary allocation of traffic. . . ."

This practice was supposed to have been proscribed by the rate-freedom provision, which is now Section 15a(3) of the Interstate Commerce Act. This includes a prohibition against holding a rate to a particular level "to protect the traffic of any other mode of transportation, giving due consideration to the objectives of the national transportation policy."

THE 6-TO-3 DECISION to which Freas objected came in a Commission report on reconsideration of the I&S No. 8038 case. Other dissenters were Vice-Chairman John W. Bush and Commissioner Paul J. Tierney. The majority report, by Commissioner Virginia Mae Brown, reversed the Commission's Division 2 which cleared reduced railroad rates published to bid for shipments of ingot molds moving over truck-water routes from Pittsburgh, Pa., to Steelton, Ky. (RA, Mar. 1, p. 12). With benefit of this clearance, the rates, which must now be canceled, were made effective last March 19.

DIVISION 2'S FAVORABLE DECISION was in a report by Commissioner Freas. It broke new ground in the field of rate freedom. It cleared the railroad rates despite the fact that the truck-water transportation is regulated, and despite identification of that transportation as the low-cost mode. That identification was in accord with the Commission's general rule which (to the dismay of the railroads) makes fully-distributed costs, rather than out-of-pocket costs, the identifier.

EXCEPTIONS to this general rule have been condoned by the Commission to permit regulated carriers to bid against unregulated competitors. Division 2 liberalized this in the present case principally because the water carriers, though regulated, were voluntarily maintaining rates below their own full costs. That prompted the Division to find that no inherent cost advatage was destroyed by the railroads' action of "meeting but not undercutting" the barge-truck charge.

THE COMMISSION'S REJECTION of this liberalization was based pretty much on the rate-freedom provision's call for "due consideration to the objectives of the national transportation policy." Inherent cost advantage, the report said, cannot be lost "merely by the creation of a rate below a fully-distributed-cost level."

THE RAILROADS' BID for abandonment of the full-cost standard in favor of an out-of-pocket-cost-plus basis was rejected as a departure too radical to take in the present case. The Commission did note, however, that a like bid is before the Commission in No. 34013, the pending case involving costing procedures.

FREAS' DISSENT defends Division 2's overruled decision as right on both legal and economic grounds. "To limit a proposed reduction to the fully-distributed level of another mode, regardless of the level of the other mode's rate or other transportation circumstances, is patently anti-competitive," Freas said. Being unwilling to assume that Congress' 1958 efforts were for naught, he thinks the Commission now "invites both reversal in court and legislative action."

on industry buying plans. He feels, as many do, that the dispute between the President and the FRB has been ballooned out of all proportion by newspaper accounts of the dispute.

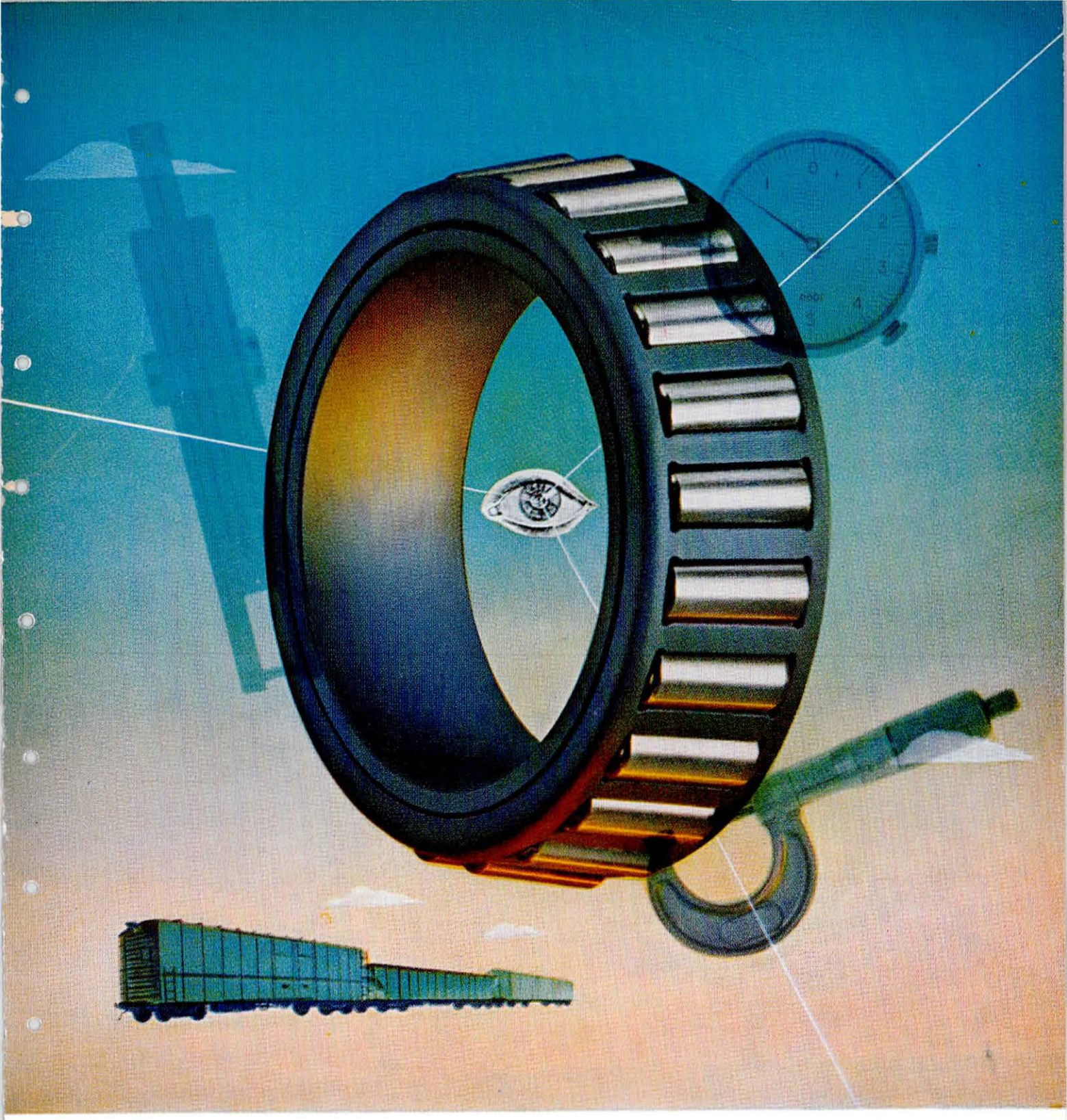
Many of the experts feel the Fed's action is, if anything, late and perhaps too little recognition of what has already happened to interest rates. "Shortages of investment capital have been pushing interest rates up for many months—and even blue-chip companies haven't been getting prime rates easily," notes one Midwestern banker. Other bankers point out that few business loans are actually made at the prime rate, that the prime rate is a floor for upward negotiation of actual interest charged. "When demand is strong, as it has been during the recent past, paying more than the prime rate is the norm," says a railroad accounting vice president in the South. "Where there are strong railroad programs involving more capital spending, I can't see how an increase of one-half per cent in the discount rate is going to cause any change," says a railroad economist.

• **Is it enough?** Moreover, many economists point out that the discount rate is not the sharp tool that the Fed uses when it wants to puncture a boom balloon. The Fed has much more effective means at its disposal for tightening up the money supply in its open market operations: FRB can buy and sell government bonds, which much more directly expands and contracts the available supply of money. In the view of most economists, Fed's upping of the discount rate last week was a warning.

One top railway supply industry figure, after talking to many industry suppliers early last week, summed things up this way: "I can't find a single responsible individual who thinks this will affect any of the railroad capital spending programs now in sight. The Fed's action influences the bank rate—and increases that result filter down to customers in much slower fashion. Some may never filter down, as some institutions take part of the added expense themselves. It's a minor adjustment and it's at the top. It will, I think, have more psychological effect. People with firm plans won't be deterred. Some of the people with projects in the back of their minds may back off a little. I think that's the crowd the Fed was aiming at in the first place." ■

Two-in-one

The next two issues of Railway Age will be combined into a single issue, dated Dec. 20/27. It will be mailed Dec. 23.



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Gordon wants big research center

A vigorous, continuous and coordinated transportation research program in Canada has been urged by Donald Gordon, president and chairman of the Canadian National.

Lack of such a program, he said, is a great obstacle to the achievement of efficient, low-cost transport in Canada.

● **Basis for decision making.** Canada needs, Gordon suggested, "an independent, university-based transportation research center or institute." Such a center would provide, on a consistent basis, the up-to-date information and analysis necessary to underpin decision making and to develop national transportation policies appropriate to modern times.

The CN chief called for the research program in an address before a meeting of the Toronto (Ont.) Railway Club.

The research center he envisioned would be a separate unit within a suitable university. It would come under the sponsorship of one department, but would draw on schools of economics, law, political science, geography, sociology, business administration and all branches of engineering.

Financial support for such a center, Gordon added, would come from government and the transportation industry. The center, however, would be completely independent of both.

Primarily, the proposed research should be directed toward solving broad and long-range problems of Canada's transport system. Specified applied research projects would be undertaken on the basis of their contribution to a basic long-range program. Another function of the research center, Gordon said, would be to offer training at the graduate level to the future managers and technical experts of Canada's transportation industry.

● **Projects overdue for study.** Gordon listed several fields he thought were overdue for study by such a research center. Among them are telecommunications, railway passenger travel, pipelines for solids, the effects of elaborate highway systems, labor relations and wage levels.

"We must," he concluded, "reduce the relative, if not the absolute, cost of moving goods and materials within Canada and to overseas markets if we are to remain competitive." ■

RAILROADING AFTER HOURS WITH JIM LYNE

LYNE

'USER CHARGES'—I do not know of any railroads at the state level that have now mounted a campaign as thoroughgoing as that by the Bangor & Aroostook and Maine Central to the end of securing compensatory charges on trucks for the use of the highways. The two roads have been airing the subject in the advertising pages of state-of-Maine newspapers.

As I interpret the situation, the two railroads intend to continue this campaign into 1966, hoping to get some positive action from next year's state legislature. Herb Baldwin, retired public relations officer of the Boston & Maine, has been called back to active duty for this task and he's making his headquarters with the MeC at Portland.

Personally, it seems to me that a campaign for highway (or waterway) user charges is primarily a duty devolving on public officials—but, if they show little enthusiasm for the assignment, what then? Must it go by default? Besides, at the state level, adequate charges are a state responsibility—certainly as much as that of the federal government.

PASSENGERS IN PHILADELPHIA AREA—Proceeding with their program of securing improved railroad passenger service in their area, communities in the Philadelphia area have come up with a program of increased and accelerated electric train service between Philadelphia and such places as Lancaster and Harrisburg. The state will contribute $192,000 to the program during the coming year—and it is not doing so in order to do the railroads a favor, but to secure for the area the quality and quantity of railroad passenger service which the public interest requires, and which is obtainable in no other manner. The 103-mile run between Philadelphia and Harrisburg will be made in 105 minutes.

DO PEOPLE WANT TRAINS?—I have a letter from a friend, who is a loyal railroader, with which he includes an advertisement from a local magazine in which a railroad explains its position regarding passenger service.

This is that the company will continue to provide passenger service for the public that indicates by its patronage that it wants the trains continued, but that the company "has no alternative but to seek discontinuance of passenger services which the public has indicated, through lack of use, that it does not need." This company has done its level best—alike by the high quality of its service and the attractiveness of its rates and fares—to build this service up, but, still, traffic volume dwindles.

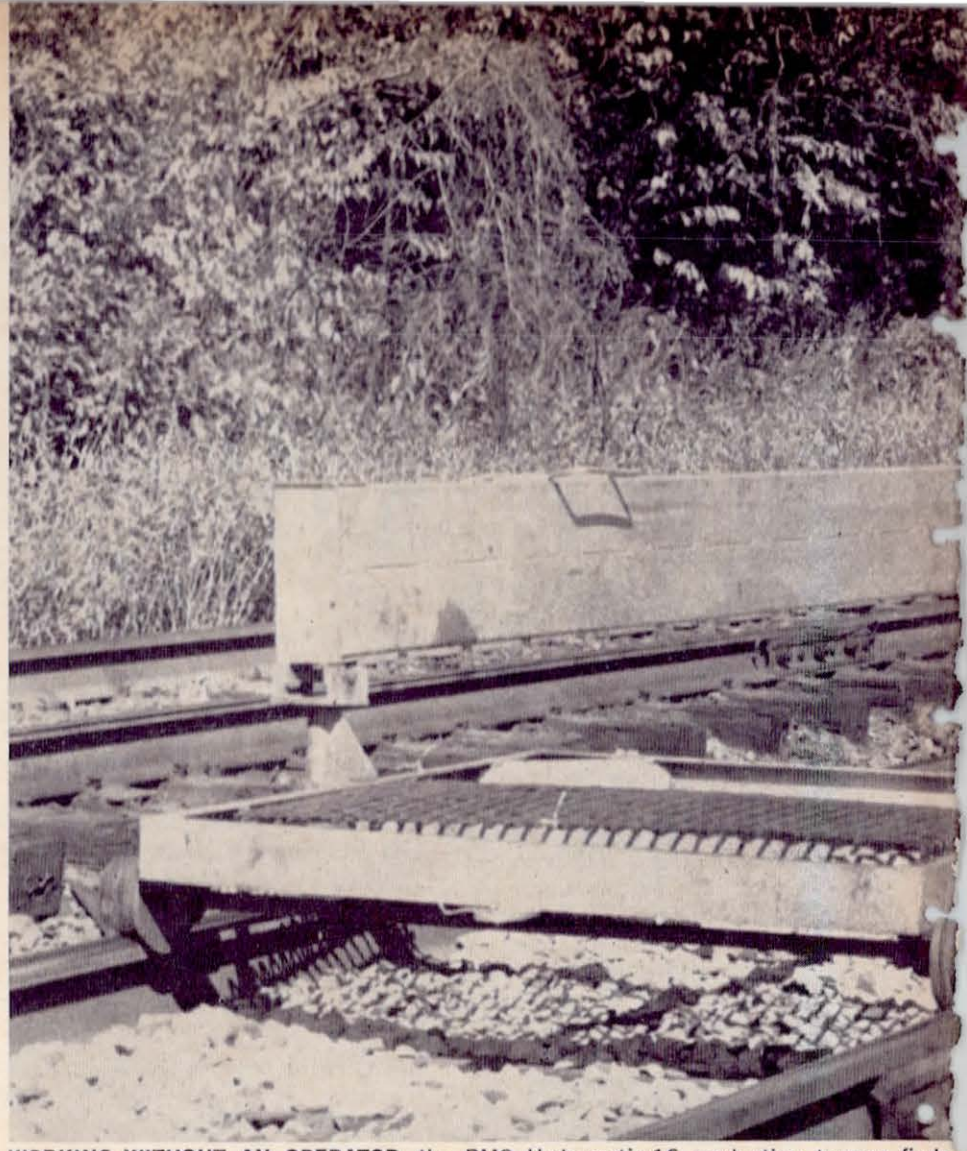
It seems to me that no company, similarly situated, has any alternative. If people want train service, then they will have to show it's needed and wanted. In some areas, the public has given considerable evidence that it does want the service and, in several such places, has adopted policies that will permit its continuance. That is one situation. In other places, both the public and the authorities are highly uninterested. In such cases, there's only one practical course left open for the railroads to follow.

There was a time, not too long ago, when railroading was enough of a monopoly so that profits not earned in one part of the business could be recouped in some other traffic area. That situation has now changed. Every railroad service must be (at least) self-supporting; and if the public and the public authorities do not provide conditions that make profits possible, then the service must inevitably shrink away.

HOW 'HUGE' ARE PROFITS?—I saw a recent cartoon, in Trainman News, depicting a well-fed hog (labeled "Nation's Railroads") feeding at a trough entitled "Huge Profits" and saying "Scram" to a man in overalls, representing Railroad Workers.

Actually, the "huge profits" railroads are enjoying are averaging only a little more than 3% on the investment, which is less than many savings banks are paying to their depositors. There are some "huge profits" being made in some parts of the transportation business (e.g., airlines, which are averaging around 10%), but the railroads are not participants in the gold rush. Is it sound business for a paper circulating among railroad employees to give the impression to its readers that railroading is much more profitable, relatively, than it actually is?

How coded rail actuates tampers



WORKING WITHOUT AN OPERATOR, the RMC Hydramatic-16 production tamper finds

- **Magnetic code marks in rail heads could be used to start the control equipment on as many as four production tampers.**
- **The system could be used to control tie-renewal and spiking machines, track-straightening equipment and track liners.**

The production tamper may be only a machine but it is taking on some human characteristics. Recently acquired is the ability not only to "find" ties but also to discriminate between them. The machine can thus "decide" whether to tamp every tie or just certain ones.

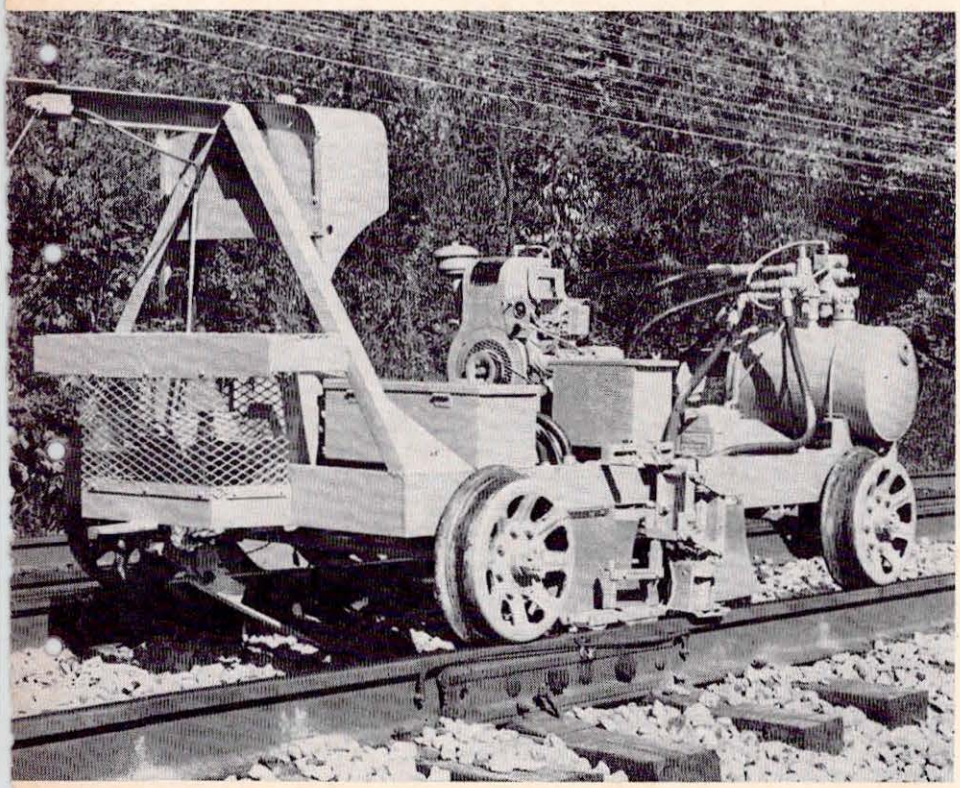
These characteristics have been made possible through a new programming system which uses magnetized code marks placed in the rail heads to actuate control equipment on following machines. Called Magne-Code Programming, the system was developed by Railway Maintenance Corp.

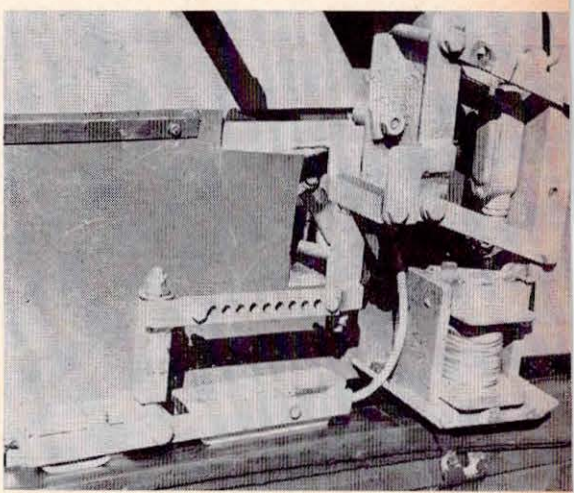
In a recent working demonstration of the system, seen by a Railway Age reporter, the code marks were used to control the operation of an RMC Hydramatic-16 Continuous Jacking Tamper equipped with an electronic surfacing device. The demonstration took place on the Pennsylvania near Apollo, Pa.

Basically, the system being demonstrated involves the use of equipment for introducing the magnetic code marks in the head of the rail, and the necessary equipment on the tamper (or other machine being programmed) for picking up the code and translating it into signals for controlling the operation of the machine.

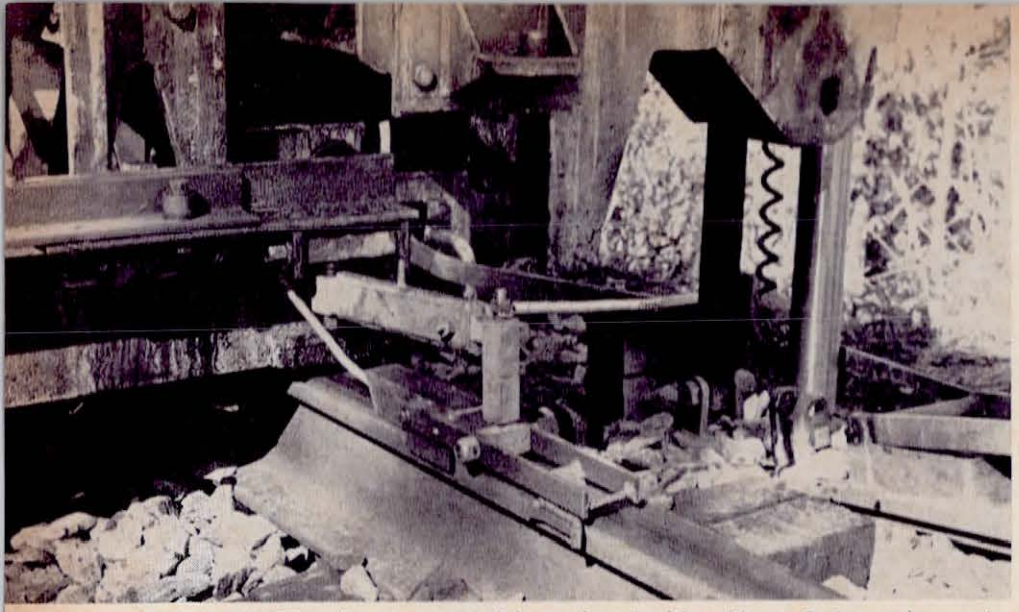
● **Coding by hand.** During the demonstration on the PRR two manual methods of coding the rails were shown. Both involve the use of hand-operated tools, each equipped with three per-

each tie and goes through its tamping cycle. On spirals and curves the operator will adjust the cross level for proper superelevation.





WORK OF FOUR MACHINES can be programmed by this Automatic Tie Finder and Encoder (left). Operating unattended at a mile an hour, it is equipped with various emergency, shut-down and start-up controls. Code patterns are imparted to the rail by energizing electromagnets that are in constant contact with the rail (above). Codes can be altered by switching configuration of magnets electrically.



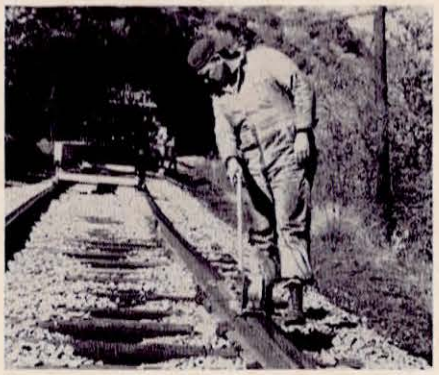
EACH MACHINE to be programmed is equipped with a Magne-Code receiver and a discriminating circuit that reacts to that code to which it is harmonious.

manent magnets. Two of the magnets are positive and the other negative. The arrangement of the magnets with respect to each other determines the code. Using either of the hand-operated encoders, the coding is done by a man walking ahead of the tamper.

The thought is that a hand-operated encoder is suitable for use with one, or possibly two, tampers. An RMC spokesman expressed the opinion that the new system can be justified for use with a single tamper because a tamper so controlled operates at a constant speed all day, and is not affected by operator fatigue as would be the case with a manually operated machine. As a result, he said, an increase in production of about 10% can be expected. He also pointed out that a machine controlled in this manner can, if desired, be operated during the lunch period, or even in darkness. Another point he made is that the operator can inspect his machine and the work in progress from beside the track while the tamper continues to operate.

● **Automatic coding.** For operating two or more tampers a system is offered for automatically applying code marks to rails. Equipment for applying the code marks automatically is mounted on a self-propelled cart and is designated the Automatic Tie Finder and Encoder. This equipment makes use of electromagnets that are in constant contact with the rail. Code patterns are imparted to the rail by energizing the magnets. The codes can be altered by electrically switching the configuration of the magnets.

The Finder-Encoder operates unattended at a speed of one mile an hour. It is designed to locate each tie and to code the rail to index a particular tamper to that location. The tie-finding is accomplished by a pendant tie feeler whose path is cleared of ballast on the ties by an oscillating arm. The unit is further equipped to work synchronously with any leading machine which may have previously applied a coding to inform the encoder that certain places—such as turnouts, rail crossings or individual ties—are to be skipped by following tampers.



MANUAL TYPE of encoder can be used by operator to code the rail ahead of the tamper. The wheel encloses three permanent magnets and a trigger in the handle turns the wheel to mark code on rail.

● **Stops, starts automatically.** The Finder-Encoder is equipped with various emergency, shut-down and start-up controls. These include a feeler arm which, projecting in front of the car, causes the unit to stop if it comes in contact with another machine on the track. If the obstructing unit moves away so that contact with the feeler arm is broken, the Finder-Encoder will resume its forward movement.

Among the safeguards incorporated in the automatic control equipment on the tampers is a time delay relay. The purpose of this is to cause the machine to stop tamping if it does not pick up a code after a predetermined time.

Each machine to be programmed is equipped with a Magne-Code receiver and a discriminating circuit that reacts to the code to which it is harmonious. It rejects all other signals—etiher codes for other machines or unwanted residuals that might be present in the rails. The equipment required includes a shoe-type pick-up device which remains in contact with the rail ahead of the tamper, a cable extending to a relay box that is tied in with the push button that controls the spotting of the machine, and an electrical control box.

● **Automatic cycling.** As a tamper picks up its own signal from the rail, it automatically spots itself over the selected tie and goes through its operating cycle. An operator is required only to crank in the run-offs and the superelevation for spirals if the machine is jacking the track as well as tamping.

The working demonstration of this system on the PRR was carried out in connection with raising, tamping and lining various stretches of track on the road's westbound freight main on its Conemaugh district between Pittsburgh, Pa., and Johnstown. The gang used consisted of a foreman and five men. In addition to the Hydramatic-16 production tamper, the equipment consisted of a Kershaw Ballast Regulator (also serving another gang) and an RMC LineMaster equipped with a Nordberg Line Indicator.

The Hydramatic-16 tamper had been working on the PRR since late spring and was being used by RMC as a working laboratory to test new ideas. The automatic spotting equipment (the Magne-Code receiver) with which it was equipped was developed on this unit.

The manual type of rail coding was being used. A hand carried tool was first used to mark every tie location on the rail. That was done three times as fast as the tamper worked. Using a wheel-type encoder, which is a later development, it was possible to mark the rails five times as fast as the tamper progressed.

● **Removing the marks.** The code signals placed on the running surface of the rails are removed by the passage of a long train. They remain with sufficient concentration, however, to be picked up after the passage of the limited number of wheels of equipment used by a normal large work gang. After use, the signals can be removed immediately with an a-c magnet.

Because of the use of these magnetic coding tools, the operator could leave the tamper, mark the rails for a considerable distance ahead and return to the tamper. Being relieved of the necessity of concentrating on the accurate spotting of the tamper 10 to 12 times a minute, the operator said he was less fatigued at the end of the day. Also, a

faster rate of production was obtained.

● **Programming three tampers.** When the Finder-Encoder is used to program the operations of a number of tampers what, specifically, will be the set-up and arrangement of the equipment? As one possibility a spokesman for the manufacturer suggests the using of four tampers. The lead unit would be a jacking tamper with automatic surfacing equipment and would raise the track and tamp every fourth tie. The Finder-Encoder would be placed on the track behind the lead tamper and would program the operation of the other three.

In this type of operation it would be necessary for the lead tamper to place a code in the rail at the tamped tie that would orient the tie finder to code only the other three ties for tamping. Each of them would then be tamped by one of the following tampers. Ties tamped by the lead tamper would not be coded and hence would be skipped by the other tampers.

The manufacturer suggests that only two operators would be required for this operation. One would be assigned to the lead tamper. The other would ride the rear machine but would keep an eye on the two intermediate units which otherwise would function unattended.

● **Permits work at night.** The Magne-Code system was also recently demonstrated on another road. The equipment setup was basically similar to that used on the PRR. That is, a manually-operated encoder was used to code the ties ahead of a single tamper. To get maximum production the tamper was being operated from early in the morning to late in the evening. What is particularly interesting about this demonstration is that, on one occasion, the tamper is reported to have operated more than two hours in total darkness. During this period the operator used a flashlight to place the code marks on the rail ahead of the tamper.

RMC reports that all Hydramatic-16 tampers delivered in 1965 are wired to accommodate the automatic spotting equipment and that all machines manufactured in the future will be similarly equipped. With the machines thus incorporating the basic circuits, addition of the automatic spotting equipment will, it is said, be simply a matter of plugging in a connecting lead and making the necessary attachments. Older machines may also be adapted to receive the automatic equipment.

Spokesmen for RMC point out that the possibilities for application of the Magne-Code system extend far beyond its use with production tampers. They visualize its use also for controlling tie-renewal machines, spiking machines, tie-straightening equipment, and even track-lining devices. ■

THE CIVIL ENGINEER

Key man on today's railroads

Present-day engineering tasks called most exciting in history.

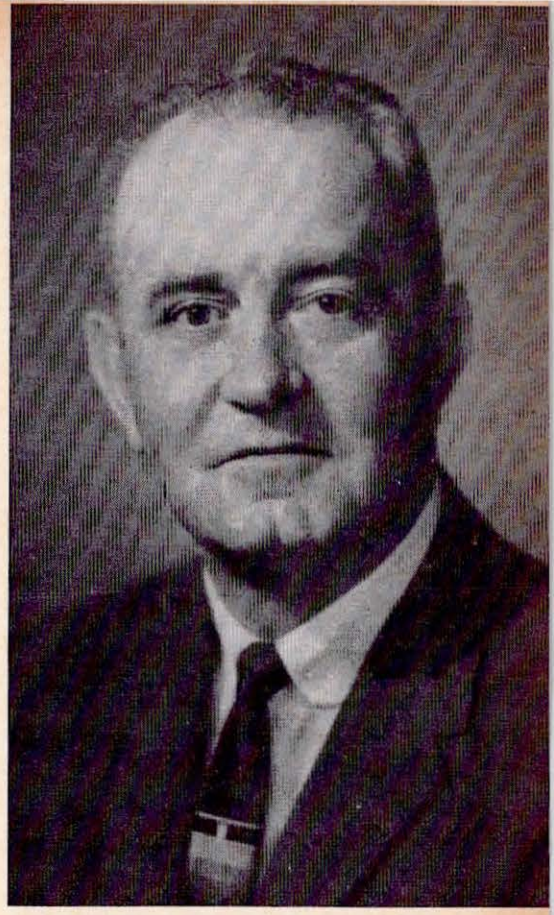
With the days of large-scale railroad construction a thing of the past has there been a decline in the status of the engineer? Quite the contrary, believes B. F. Biaggini, president of the Southern Pacific. Himself an engineer by education and early experience on the SP. Biaggini pictures the modern railroad engineer as a man confronted with even tougher and more exacting challenges than those faced by his counterpart of several generations ago.

Biaggini's ideas on the subject were set forth in an address delivered at Portland, Ore., before a regional meeting of the American Railway Engineering Association. This was a pilot meeting designed to test the value and feasibility of regional gatherings to supplement the association's annual convention at Chicago. Included in the audience was a considerable proportion of younger engineers. The major part of the address follows.

The entire business of railroading is uniquely dependent upon the skills and abilities of the engineer. The history of the industry illustrates this fact well.

Certainly my own company, Southern Pacific, is a fine example. The very beginning of this company, its original reason for existence, was dictated largely by the geography of the time—geography which could be thwarted only by one of the brilliant engineering feats of all time.

When Theodore Judah headed eastward from Sacramento and over the Sierra Nevada to seek a route for the transcontinental railroad, he was writing the beginning of one of the most dramatic chapters in the history of engineering. The magnitude of the task he faced, and the obstacles overcome by the men who completed his task, were so great that it is difficult even today to comprehend how they could have been so successful.



B. F. BIAGGINI, SP president and author of the address excerpted herewith.

This was, of course, a golden age for railroad engineers. Those were the days that the pairs of steel rails were snaking across the country, binding cities together across hundreds of miles, and revamping the nation's economic and social life. For we must remember, too, how singular a position the railroad filled in the last half of the nineteenth century. It was the only practical means for long-distance travel, and its coming wrought great changes upon the face of the land.

● **Men of status and glamor.** Perhaps it was because of the dramatic growth and excitement of this time of furious construction that the railroad engineer gained the status and the glamor that he enjoyed. It was natural that, with the entire nation dependent for its transportation upon his abilities, he would be highly honored.

This was the situation throughout the remainder of the nineteenth century, and the first 20 years of the twentieth. Then, as the truck, the automobile and the airplane came into being, it was equally natural that attention would focus on them and the men who built the highways and waterways, with a corresponding decline in the stature accorded the railroad engineer.

But if you think this situation still exists today, you couldn't be more wrong. For railroads, entering into a new era of advanced technology and daring innovation, are undertaking pro-

"... The saleability of our transport product depends almost entirely upon how well our engineers perform."

jects and making demands upon their engineers which rival and surpass the roughest tasks they faced when they started to build this railroad system.

For that matter, the glamor and excitement of the fight against nature which dramatized the early railroad engineer is still very much with us. My company today is completing the engineering on our Colton-Palmdale by-pass, a 78-mile line of new construction, which traverses some of California's most rugged area, in order to provide a short-cut around the congested Los Angeles basin for rail traffic moving between the West Coast on one hand and the Southwest and South on the other.

Nor must the civil engineer of today bow in humility when the old-timer tells him how rough it was in the good old days, as he made his way across the trackless wastes. . . .

● **Tranquility was lacking.** Speaking from my own experience, I can truthfully say that the 17 days that I spent on the summit of the Cascades last December and January, as we struggled to get Southern Pacific's main line back into service after a catastrophic storm, were not the most tranquil I have ever experienced in my career as an engineer.

[But] there still can be no doubt that the role of the railroad civil engineer has changed mightily, in the years since his first preoccupation was building the railroad. And yet, I reaffirm that the challenges he faces today are the most exciting, the most stimulating tasks which men of this profession have ever had presented to them.

It is, perhaps to you younger engineers who have not been exposed to the mystique of "the good old days," that I should now address my words, for certainly you railroad civil engineers who have been long in this profession are tremendously aware of the changes that have taken place in our industry—and in your methods—in recent years.

Look, for example, at the revolutionary changes that have taken place in the railroad system that you now must engineer for. New, heavier diesel locomotives, mechanized maintenance of way equipment, centralized traffic control, with its tremendous effect on the engineering of passing tracks; the new concepts in yards and their operations; a hundred and one other technical innovations, each of which has had direct and tremendous impact on your work.

● **Passing tracks re-evaluated.** Take, for instance, the use of centralized traffic control, which we are installing throughout a great part of our system. This system of electronic control of trains has necessitated the re-evaluation of our entire system of passing tracks. We have moved them out of towns, lengthened them, and spaced them so accurately that, in many cases, our train meets can be made on the run, without either train stopping.

Or look at the impact of such a fundamental thing as traffic rates. As you may know, Southern Pacific has pioneered in the concept of incentive rates; rates which reduce the unit cost to the shipper for heavier loads. And, as shippers take advantage of these rates, our loads grow heavier—as loads grow heavier, our equipment grows larger. And suddenly you find yourselves redesigning curves and tunnels, and passing tracks and especially yards for new equipment, twice as long as was used when the road was laid out, and twice as heavy.

Take also into consideration the tremendous impact that modernized methods of operation are having on your duties. Today, in the face of the tremendous competition of other forms of transportation, we realize fully that the only way we can protect our commerce is to do a better job of moving this country's products than any other type of carrier can. This is a problem we are facing squarely. Today's freight trains move at express speeds, in heavy-powered trains; their operations must be worked out so they have the minimum of delay at terminals or along their routes; their performance must be of a nature that will permit us to unreservedly guarantee the delivery of their contents at their terminals on time—and on time means spotted and ready to unload.

What challenges does that bring to you? It does, of course, reinforce the necessity that I mentioned earlier—yards and tracks which are capable of handling today's equipment under today's operating conditions.

● **Not highway engineers.** But, equally important, it also demands of you that the construction and maintenance work you are doing must be programmed so ingeniously that you not delay the tremendously important schedules of these trains. You're not a highway engineer who can build a detour, and let the traffic bump over it for several months while you build your road—or better yet, select a new

RECONSTRUCTION of SP's main line after last winter's storm in the high Cascades was a tremendous engineering feat.

route and blissfully work on it while the traffic speeds by a mile away. You're not the dam builder who can build a coffer dam and leave half the river open while he works on the other half.

No—you're required to bring this railroad up to the new standards that we need, with the consequent replacement of structures, and the realignment of tracks and yards, without disrupting the flow of traffic over its lines.

This was a tremendous order back in the days when railroads were first built. But with the great growth in our operations, and with the huge increases in our traffic, it becomes a tremendous task. . . .

Major reconstruction jobs are being carried out with a minimum of delays to traffic. Truss bridges built 50 or 60 years ago are now being replaced with prestressed concrete structures, and the work is so well programmed that the actual time from the time the old bridge is taken out of service and the new one

"... It is no accident that the railroad industry is officered by a great number of ex-engineers."

is opened averages about six hours.

Similar records are being made as we change out long stretches of rail and replace it with welded rail, literally between trains. And renewal of ties on bridges has been adapted to a method by which we install completed panels of ties, prefabricated at roadside sites, rather than using the old method of replacing them by hand.

● **Rubber-tired tampers.** We've also seen you adopt new methods of track maintenance by using a variety of modern equipment. We are experimenting with mechanized tie tampers, equipped with pneumatic tires, so they can be wheeled on or off the track at virtually any location, permitting trains to roll by without delay, and ending the long delays caused by moving to the nearest switch. The old-fashioned track gang of 150 men has been replaced with streamlined crews of 15 to 20 men equipped with the latest mechanical equipment, which can do the same job much faster and with much higher standards of quality.

These are challenges of today's operations, and our railroad civil engineers are meeting them with skill and ingenuity. But let us turn to another problem which is already upon us—and which will be with us for all time to come, as long as there are railroads.

I refer to the tremendous task that you are already engaged in, and will be even more so in the future, of engineering the railroad so that it can operate efficiently and compatibly with the environment which surrounds it. It is a large task today—it will be almost a superhuman one in times to come.

● **Problems of population.** We here on the West Coast are increasingly aware of the huge influx of population which has turned our towns into cities and our cities into megalopolitan areas sprawling across hundreds of miles. In this tremendous growth, in these new patterns of population, we are encountering great problems.

How, for instance, do you expand your yards to take care of increases in traffic, when the whole weight of the city is already pressing against its boundaries? And how do you keep your traffic speeding from point to point as street after street after street is created and strung across your tracks, with the corresponding pressure for speed limits and complicated safety devices?

And, above all, how do you plan, engineer and install these devices and these tremendously complicated and expensive structures, and at the same time hold down the cost of your railroad operation, so that you can remain competitive with intermodal competition?

For these expenditures, vital as they are, bring no return to the railroad. It is true that if you increase the size of a yard, you are contributing to the profitability of the company through the increased business the yard can handle. But the extra engineering, and the extra costs due to the pressure of metropolitan areas upon your location, are purely wasted dollars—dollars spent for costs which can bring you no return.

● **Negative virtue.** And it is most obvious that grade crossing structures, crossing protection, and other devices needed to protect our lines from the onslaught of motorists make no contribution, either. Their virtue is a negative one—they permit us only to operate more efficiently than if they did not exist.

I have mentioned these efforts in the context of holding costs down where there is no revenue to be gained from the installations. But certainly, these same efforts to hold cost down apply all across the railroad, in everything you design and build.

For, as I told the Engineering Division of your national association in Chicago two years ago, engineering is a tool of profit.

The saleability of our transportation product—its speed, its reliability and its low cost—depends almost entirely on how well our engineers perform. And you, by using your skill and imagination to find new ways to do things cheaper and better, play a major role in determining what part of our gross revenues we can turn into net profit. And net profit, I have no need to remind you, is the fuel which makes this railroad go— the tool which provides us the means to operate our business.

● **Do engineers over-engineer?** To an engineer this is a particular challenge, for he faces not only the task of designing and building properly, but the equally important task of discerning the proper procedure for the proper place and time. Engineers, I fear, have a basically human and prideful fault—they want to do the best job possible. And, in this pride, they often over-engineer.

It isn't necesary, for instance, that every mile of railroad we own be converted to CTC. Nor is it necessary to build the best bridge we're capable of building across a creek, if a cheaper bridge will handle the job adequately.

This is a real challenge, and in an atmosphere where it is cultivated, real genius flourishes. For the engineer who can look at the situation, and then, without regard to the way it is done now, comes up with a new answer which does the job more efficiently and less expensively, is a valuable man indeed.

● **Cause for suspicion.** One of the characteristics of such engineers as these is their persistent suspicion of any procedure that has been going along

"... The more hallowed a procedure has become, the greater possibility there is for improving it."

in just about the same way for any considerable length of time. Quite often, the more hallowed a procedure has become, the greater possibility there is for improving it.

Finally, I must come back to the position of stature possessed by the railroad engineer today. I do so because I must point out to you that it is from your ranks a great proportion of the executives of our industry come.

We need, it is true, the engineer that blazes his way across the spaces, improving and relocating his railroad. We need the transitman and the rodman, and the men who design our trestles and our structures.

● **Management talent.** But, we do not need them for their technical knowledge alone. In the freedom they have had to make their decisions, in their constant evaluation and reevaluation of procedures upon which our railroads depend, they form the finest pool of management talent in existence.

It is no accident that the railroad industry is officered by a great number of ex-engineers.

The young man who becomes a railroad engineer today is faced with as exciting a range of possibilities and opportunities that exist anywhere. And, in the exercise and growth of his talents as an engineer, he is thoroughly training himself for the day when he must make greater and harder decisions, by using the same criteria that he used when he was young— imagination, and resourcefulness and ingenuity.

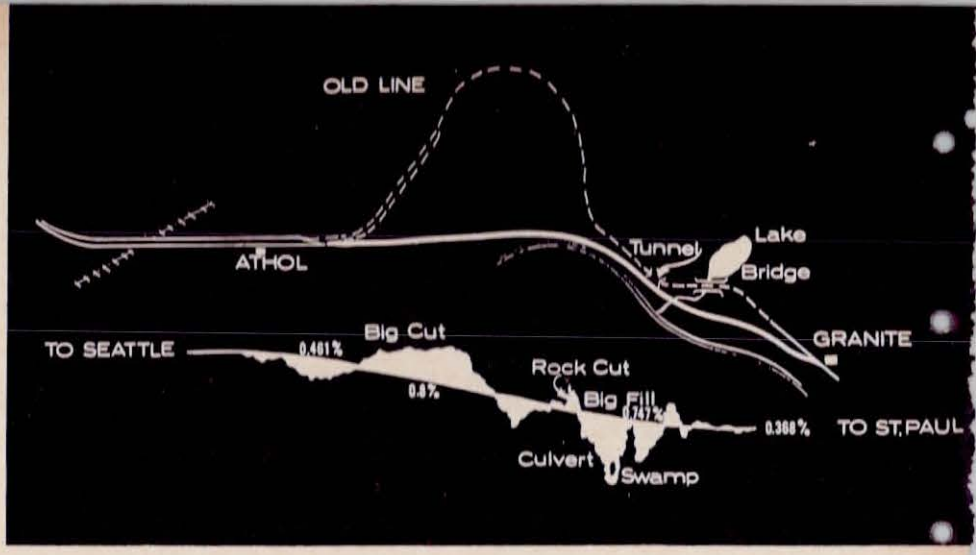
This industry cannot stand still. When we stop, we start to die. When we hesitate, we lose ground. We must move continually forward, with new procedures and new services; new efficiencies and new savings—an ever renewing industry.

You are the men who can do this, because this is what you have always done. Challenge the situation as it exists, and improve upon it. Devise a better way of doing things, and a more efficient one. Remold the railroad continually into an ever finer transportation system.

Just as Theodore Judah revolutionized the economy of the West when he started those iron rails over the Sierra, you can continually revolutionize the economy of the nation, by offering to it the finest railroad transportation system man can devise. ■

WHERE CHANGE WAS MADE

Benefits produced by the project were obtained at the expense of heavy grading. The 1,200-foot viaduct on the old line was in effect replaced by a high fill pierced by a huge culvert.



READY FOR THE RAILS

With rollers in place preparations here are complete for laying of long rail strings. This cut in solid rock is 56 feet wide, 70 feet deep and 600 feet long.

Photographs above and on cover courtesy Spokane Spokesman-Review

Costly line change pays off for NP

The new line permits high-speed operations with no clearance problems.

$3-million job was cut in on September 24.

Planning for the project began back in 1962.

RIGHT ACROSS A SWAMPY DRAINAGE BASIN

With the new culvert in place work proceeds on the big fill. Dragline in right background is excavating material from the swamp. Old viaduct is in center background.

Northern Pacific has reduced operating time on its main line between Granite, Ida., and Athol by six minutes at a cost of $500,000 per minute.

In this territory the company has completed a 5-mile-long line-change project that shortened its main line by less than two miles at a total cost of $3 million. That's $1.5 million per mile of line eliminated.

What benefits is the railroad getting that led it to carry out a project that seems, superficially anyway, to be a rather expensive undertaking? The answer may be had by a closer look at what was accomplished by the project.

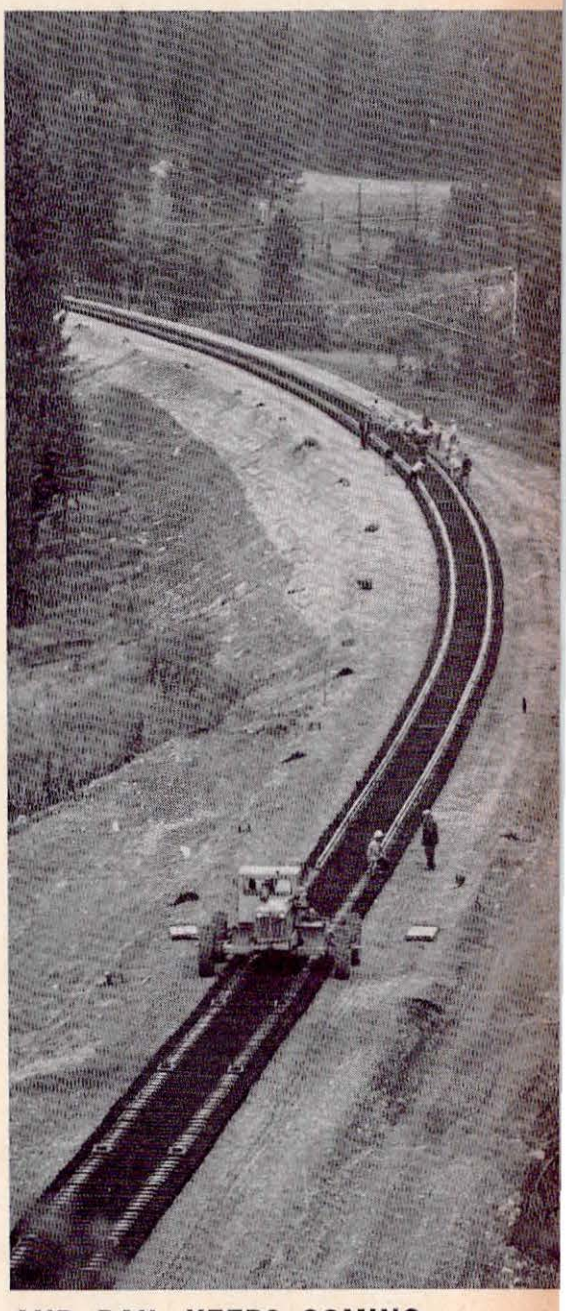
- **Line was obstacle course.** The old section of line had a great deal of sharp curvature, steep grades, a 434-foot tunnel and a 1,200-foot viaduct, both 73 years old. Not only were speed restrictions imposed on traffic but also limitations on high/wide loads. The new line eliminates the restrictive tunnel, the viaduct and 287 degrees of central angle. The result is that high-speed operations are now permitted with no clearance problems.

In accomplishing the line change that produced these benefits NP ran into some exceedingly heavy construction. Included in the new construction is a 1.5-mile-long cut that required more than 2.5 million cubic yards of excavation. Also, there is a fill across a swamp which, recognised as the highest railroad embankment in the Northwest, was constructed under extreme difficulties.

- **Planning started in 1962.** Original construction by the Northern Pacific through the area was completed in 1880. Twelve years later the line was changed to eliminate extremely steep grades. At that time the tunnel and viaduct were built. Alteration of the route was considered from time to time in the intervening years. It wasn't until 1962, however, that really serious planning was undertaken. Formerly, it had been believed that the probable presence of immense quantities of rock rendered the project impracticable if not impossible.

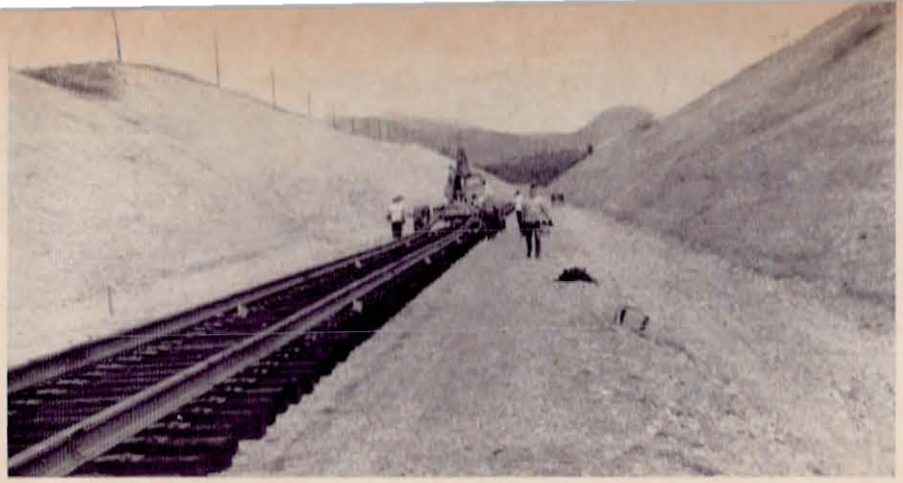
A field examination of the area and a magnetometer survey were conducted by NP's geology division during the summer and fall of 1963. These studies revealed that the obstacles were not insurmountable, so the railway's engineering department proceeded with construction plans.

An important part of the preliminary work involved test drilling by the E. J. Longyear company. Core samples obtained from this drilling indicated that the proposed crossing of the swampy drainage basin of Granite lake



AND RAIL KEEPS COMING

Straddle buggy waits here for rail train to be moved up for unloading of next strings of butt-welded rail. Men in background are spiking every sixth tie.

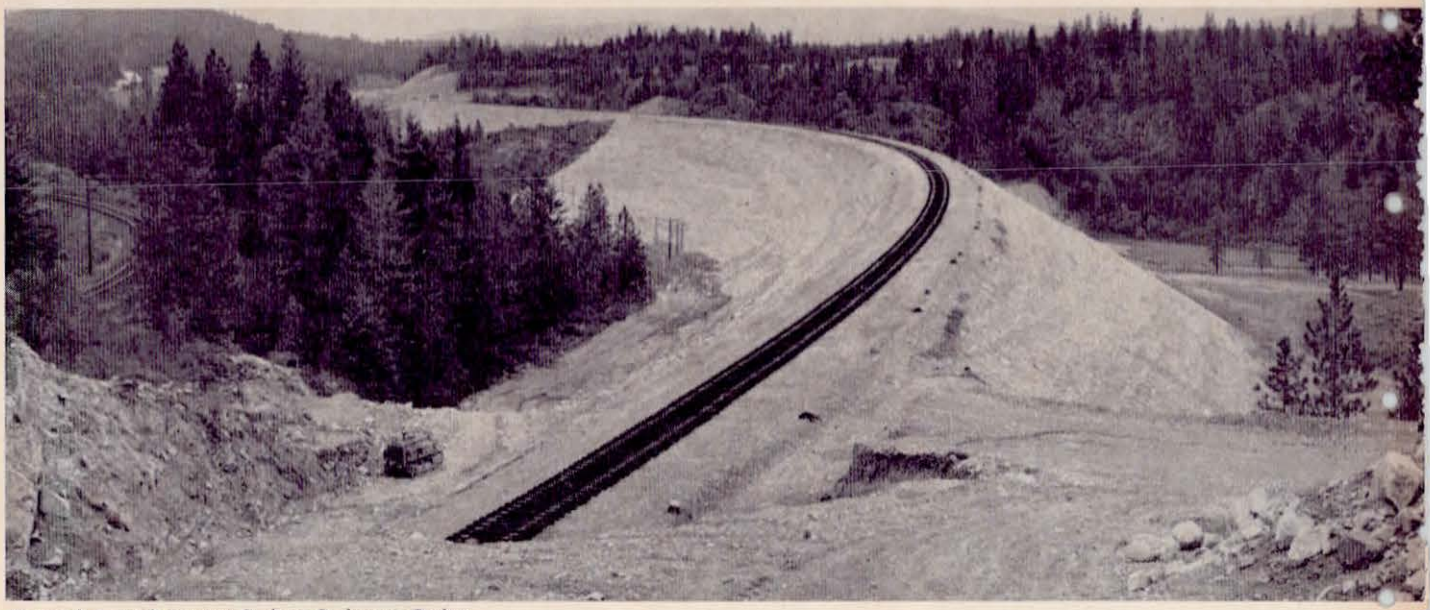


REMOVING THE ROLLERS

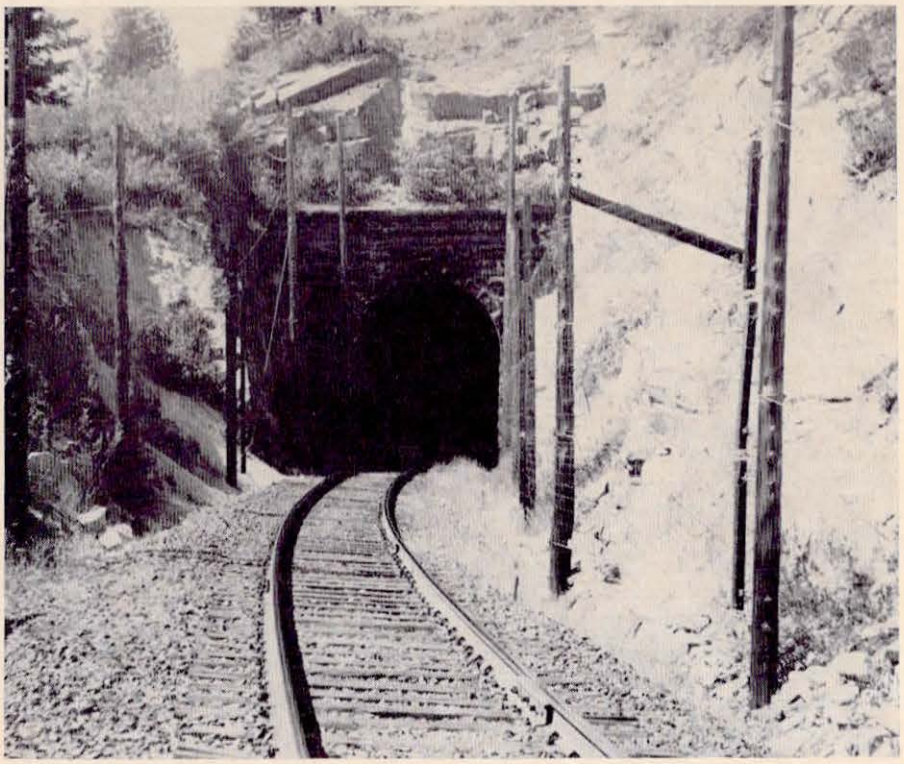
Scene in big cut as straddle buggy lifts newly unloaded rail strings to permit rollers to be removed.

FILL CAME FROM BIG CUT

Completed fill across swamp has maximum height of 115 feet. Section of old line is visible at extreme left.



Above photograph courtesy Spokane Spokesman-Review



WHY THE HUGE PROJECT WAS UNDERTAKEN

Old tunnel imposed restrictions on high/wide loads. Note slide fences installed to protect track from falling rocks.

would not be possible at the point selected

• **Swamp crossing found.** Once again, then, the geology division was called upon to find a feasible crossing. A site where the swamp was shallower was discovered some 1,300 feet downstream from the first location. At this point, a maximum of only 30 feet of peat and other debris would have to be excavated to reach a firm foundation for the record fill.

The fill is 145 feet at its highest point above the foundation. It was built over a huge corrugated culvert, 120 inches in diameter and 604 feet long, which now carries drainage from the lake. Material for the fill came unaltered from the 1.5-mile cut. It consists of well-graded, medium-to-coarse gravel with 5 to 10% silty clay fines. Engineers reported the material "couldn't be better if it had been provided by specification."

The contract was let in May 1964, and the initial work of clearing was begun on June 1. On Dec. 15, 1964, with the project almost 70% complete, work was shut down by winter weather. Grading was resumed on March 15, 1965, and was carried to completion in

early July. Then track-laying, with 132-lb butt-welded rail, was begun.

● **Ties were preplated.** Double-shoulder tie plates were applied to the ties in a fabricating area set up at the Athol (west) end of the line change, where ample room was available. Two jigs were used. This permitted boring holes and implacement of tie plates and hold-down spikes at one jig, while completed ties were removed from the other and replaced with ties to be plated.

Each jig consisted of two lengths of 39-foot rails mounted parallel and held in position by rods and bolts. Cranes were used to move the jigs into position. The ties, which were pre-drilled for line spikes, were placed on a prepared area with one end of each tie butting against a shoulder that ran the full length of the prepared area. Once the ties were laid down in the proper alignment the jig was lowered and the tie plates placed in position under the rails. Holes for the hold-down spikes were drilled through the tie plates into the ties. Cut spikes were driven in these holes by a mechanical spiker. The jig was then lifted off the ties and they were loaded on trucks for delivery to the track-laying area.

Track bolts, spikes, etc., were placed on the subgrade shoulders in advance of tie distribution. Ties were placed on final line and spacing directly from the trucks.

● **Laying the rail.** A straddle buggy was used in placing the rails. The buggy first distributed special rollers which were placed on the ties at specified intervals. It then pulled two welded strings from the rail train and dragged them forward until they were resting on the rollers for their entire length. The buggy then passed over the lengths again, lifting them to permit removal of the rollers, thus allowing the rails to come to rest on the tie plates. Rails were spiked at every sixth tie before the rail train was advanced to unload the next string. Behind the rail-laying operation another crew completed the track construction.

The line change was cut in on Sept. 24, 1965, with the eastbound "Mainstreeter" doing the honors. Only five days of "seasoning" were required before all speed restrictions were removed and traffic began to move at the 79-mph maximum speed.

The new line is 1.82 miles shorter and has a curvature of only 1 degree 20 minutes, compared with 8 degrees on the old one. Because of these improvements, as well as elimination of the tunnel and viaduct, the minimum operating time between Granite and Athol has been cut from 10 to 4 minutes. ■

As the Publisher sees it . . .

I once heard the publisher of a manufacturing magazine say that if it came right down to it, his editors could do a pretty fair job of running a factory. Interesting.

Then along came the Florida East Coast strike. It's a matter of record that the men in the FEC front office rolled up their sleeves and did a lot of things they had been telling other people to do.

Last month the northeast power failure started me thinking again about people pitching in to get a job done. If they had to, I asked myself, could the editors of Railway Age run a railroad? Frequently, we have to remind ourselves that we really are in the publishing business—not the railroad business. I ran down the list of editors, recalling the technical education of each, his probing study of his department, his active membership in railroad industry associations, and, in many cases, his actual working experience on a U.S. railroad. Perhaps they could run a railroad, perhaps they could not. However, I thought a review of the list did point out that our staff, collectively, is a powerful weldment of journalistic and professional skills that helps make Railway Age so thoroughly and extensively used. The roster reads like this:

JAMES G. LYNE—B.A., University of Kansas; Ph.D., New York University; *Chicago, Rock Island & Pacific;* director, commercial research, Traffic Executive Association—Eastern Railroads, 1957-64.

LUTHER S. MILLER—B.A., University of North Carolina; graduate work, London School of Economics; *Federation for Railway Progress.*

FRED C. MILES—B. A., M.A., Columbia University; research executive, R. H. Macy & Co.; editorial assistant, Barron's; reporter, New York Sun.

GARDNER C. HUDSON—B.A., Brown University; M.B.A., Harvard; *Boston & Albany;* former executive secretary, Kentucky Railroad Association.

JOHN D. MITROS—University of Chicago; *Illinois Central.*

GUS WELTY—B.A., Grove City College; reporter, editor, Greensburg (Pa.) Tribune-Review; member, Association of Railroad Superintendents.

WALTER J. TAFT—B.A., Providence College; M.B.A., Harvard; *New York, New Haven & Hartford; Bangor & Aroostook; Boston & Maine;* member, Traffic Club of Washington (D.C.), White House Correspondents.

EDWARD F. DONLON—B.S., University of California (Los Angeles); graduate study, Boston University; Wilbur Smith & Associates.

CHARLES L. COMBES—M.E., Cornell University; *Delaware & Hudson;* member, American Society of Mechanical Engineers; Locomotive Maintenance Officers' Association, Car Department Officers Association.

FRED N. HOUSER—B.S. in M.E., Carnegie Institute of Technology; *Bessemer & Lake Erie;* Babcock & Wilcox; registered professional engineer; member, A.S.M.E., C.D.O.A., L.M.O.A.

NORMAN E. GILLESPIE—B.S. in M.E., Purdue University; *Chesapeake & Ohio; D&H;* member, A.S.M.E., L.M.O.A., C.D.O.A., Air Brake Association.

JOSEPH ASHER—Columbia University; graduate studies there and at the Sorbonne; member, Transportation Research Forum.

MERWIN H. DICK—B.S. in C.E., University of Kansas; *Atchison, Topeka & Santa Fe;* member, American Railway Engineering Association, Roadmasters and Maintenance of Way Association, American Railway Bridge & Building Association.

R. E. DOVE—Northwestern University and Armour Institute (now Illinois Institute of Technology); *Milwaukee Road;* member, R&MWA, A.R.E.A., ARB&BA, Maintenance of Way Club of Chicago.

JAMES P. SHUMAN—*Pennsylvania Railroad;* IBM instruction agent.

ROBERT W. McKNIGHT—B.E.E., Clarkson College of Technology; member, Communication & Signal Section, AAR; Institute of Electrical and Electronics Engineers.

EUGENE P. LEONARD—*Milwaukee Road.*

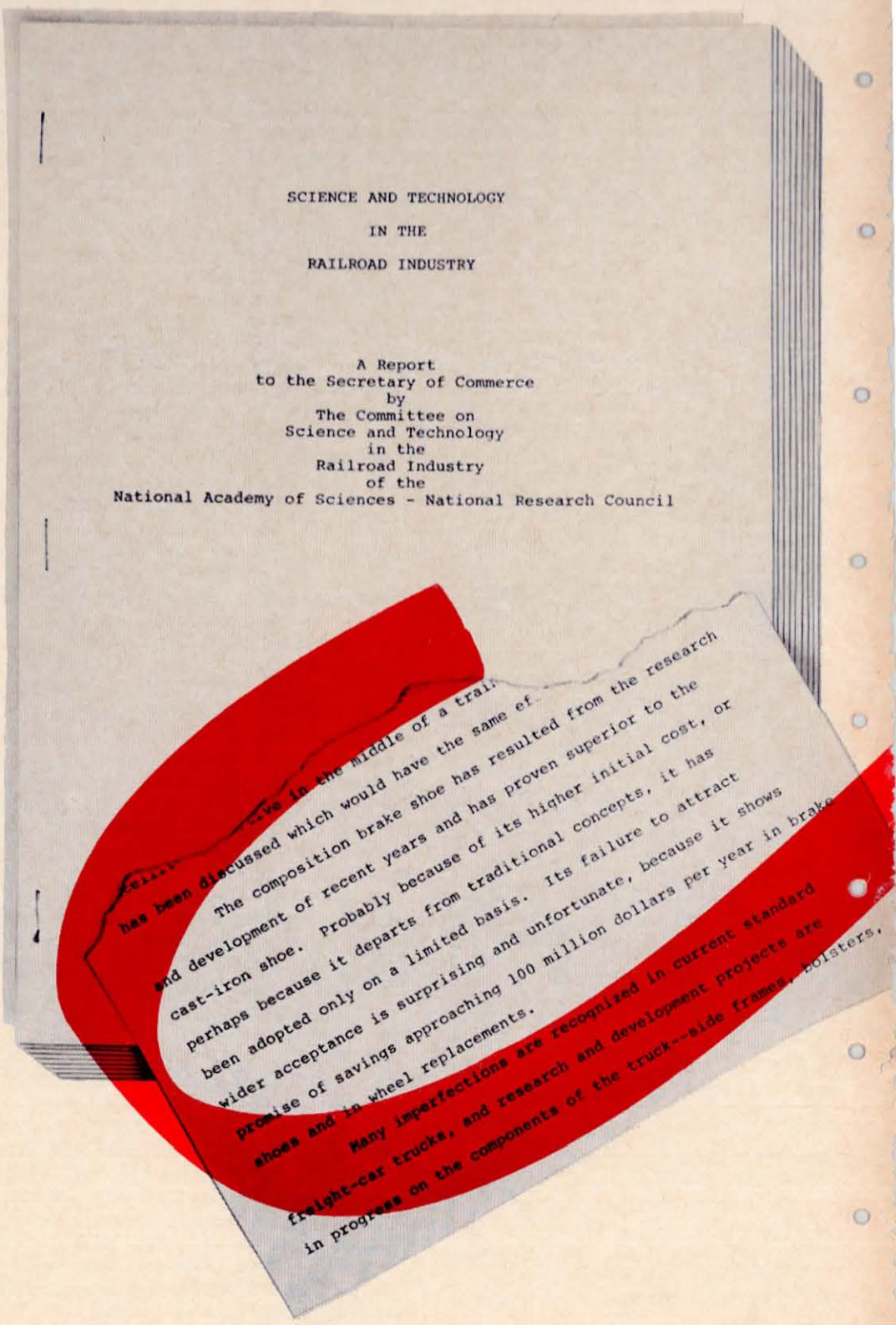
If we stepped over into our business department, we would find additional practical experience. J. S. Vreeland was a track supervisor on the *Rock Island* before he came to Railway Age. C. J. Fisher and W. A. Cubbage, between them, have a record of 35 years with the *Pennsylvania.* Harry H. Melville served for a while with the *Lehigh Valley.*

As for the publisher, I am proud of my own industry experience with the *Pennsylvania* and the *B&LE,* my membership in the Superintendents' association and my active work with the Railway Progress Institute.

I think our staff could go a long way toward running a railroad. Of one thing I am sure: No other magazine has a staff with anything like the practical knowledge of the Railway Age staff.

ROBERT G. LEWIS

If you want to lower read this report:


SCIENCE AND TECHNOLOGY
IN THE
RAILROAD INDUSTRY
A Report
to the Secretary of Commerce
by
The Committee on
Science and Technology
in the
Railroad Industry
of the
National Academy of Sciences - National Research Council
has been discussed which would have the same ef
The composition brake shoe has resulted from the research
and development of recent years and has proven superior to the
cast-iron shoe. Probably because of its higher initial cost, or
perhaps because it departs from traditional concepts, it has
been adopted only on a limited basis. Its failure to attract
wider acceptance is surprising and unfortunate, because it shows
promise of savings approaching 100 million dollars per year in brake
shoes and in wheel replacements.
Many imperfections are recognized in current standard
freight-car trucks, and research and development projects are
in progress on the components of the truck--side frames, bolsters,

brake shoe and wheel costs,

FROM PAGE 93

"The composition brake shoe has resulted from the research and development of recent years and has proven superior to the cast-iron shoe.

. . .

it shows promise of savings approaching 100 million dollars per year in brake shoes and in wheel replacements."

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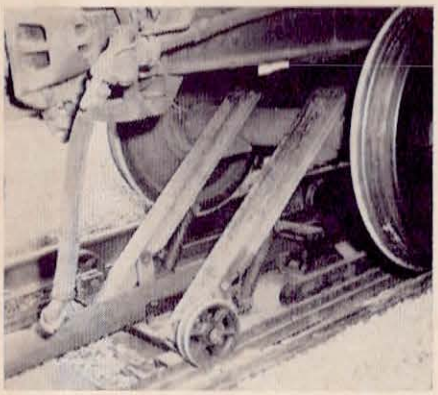
NEW PRODUCTS REPORT

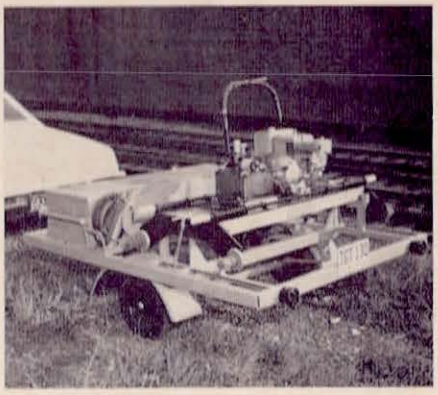


Car Mover (RA-1)

A 300-ft length of 4-in. rubber hose actuating a "sled" which pushes freight cars at a New York Central Cleveland, Ohio, yard is said to have cut moving costs by as much as 50%. The car-moving system, operated by one man, has three principal parts: the hose, which lies stationary between the rails; a hydraulic pump linked by piping to both ends of the hose; and the wheeled sled which rides in channel-rails inboard of the running rails and straddles the high-pressure hose. The hose passes between two rollers on the sled and, as hydraulic fluid is sent through it, its movement is restricted by the pinch of the rollers. The pressure of the trapped fluid propels the sled, the two arms of which push the car. The 1,300-psi fluid provides 20 lb of linear force for every ton of freight pushed. The sled can push in only one direction, but can be moved backward by reversing the fluid flow. The pusher arms deflect to pass beneath standing cars. The mover was designed by R. J. Mangan, an NYC research engineer. The hose is a Goodyear product. *Cleveland Technical Center.*

Stop Check Valves (RA-2)

The AS-201 and AS-212 automatic stop and check valves, in 1½- and 2-in. sizes, shut off steam to 300 psi. The shut-off valve is eliminated. One- or two-push-button control panels can be mounted near the steam generator. The one-button control opens the valve; the two-button control both opens and closes the valve. Present steam shut-off-valve control wiring on a locomotive can be used. Kits are available to convert valves in the field. *Vapor Corp.*



Track Liner (RA-3)

Pinpoint precision lining by one man and a helper is claimed for the recently developed Rail Tech-A.R.C. Trackliner. A highway carrier makes the outfit highly portable. The self-contained hydraulic power unit remains on the trailer or is placed on-rail, integrally with the lining unit and measuring instrument. Remote control permits the operator at the on-track measuring instrument to operate the power unit at all times. *Railway Techniques, Inc.*

Heterodyne Microwave (RA-4)

The KTR III, new IF heterodyne microwave radio equipment is capable of transmitting 1200 FDM channels or 30 megabit wideband data. It is solid state except for the traveling wave tube and optional klystron master oscillator. Transmitter output power is 5 watts. Frequency stability is 0.0002% as a repeater and 0.002% as a terminal. The KTR III has central metering which makes possible testing and adjustment without traffic interruption. *Raytheon.*

Radio Base Stations (RA-5)

A new solid-state base radio station provides up to 50 watts in the 30-50 mc band and up to 300 watts in the 136-174 mc band. A new Compa-Station base radio provides 100 watts in the 30-50 mc band and 60/90/110 watts RF output in the 150.8 to 175 mc band. These new base radio stations can be used for local control, extended control or remote control. Transmitter audio distortion is less than 3% at 2/3 maximum system deviation at 1,000 cps. *Motorola.*

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Big cars pose thorny problems

But if they're a maintenance man's nightmare, they're a traffic man's dream. And the challenge will have to be met.

While longer, higher, wider and heavier freight cars introduced over the past eight years are producing major technical problems for the railroad industry, they must be credited with reversing what had been a downward traffic trend, F. A. Danahy, chief mechanical superintendent—car, New York Central, told the New England Railroad Club last week. As a panel of technical experts, including Danahy, discussed various facets of the situation, it became apparent at the Boston meeting that many of the big-car problems are still far from resolved.

But, as Moderator J. W. Wiggins, vice president—engineering and transportation, Maine Central, noted in summary: "The challenges of longer, heavier cars will be met to supply railroad customers' needs." Other panel members were C. J. Code, retired assistant engineer—staff, Pennsylvania, and G. M. Magee, director of engineering research, AAR.

● **Customers set standards.** Mechanical departments, Danahy conceded, probably did not move fast enough in producing big car designs, thus setting the stage for customer-established standards which then had to be met with a multiplicity of arrangements. In any case, he said, "it is difficult to conceive a weight limit of 100 tons when barges and pipelines are the competition."

The new equipment now makes up a substantial portion of the total car fleet. Operating, or on order, are approximately 100,000 cushion underframe cars, 3,500 high-cube box cars, 35,000 piggyback and auto-rack cars, and a large number of high-capacity hopper cars. With all of these cars there have been some problems.

Unresolved by rolling stock designers, explained Danahy, are typically the following:

—High-speed operation for which today's general-service car trucks are inadequate because of the severe wear they develop and because of the shocks which they transmit to lading;

—Train handling which might become a problem when solid trains of cushion underframe cars are handled;

—Wind resistance, which is becoming an appreciable problem with multi-level rack cars when an empty train requires 30% more power than an equivalent train loaded with automobiles.

● **M/W problems.** Four problem areas are involved as the maintenance of way department considers today's large freight cars, explained Panelist Code: High wheel loads, clearances, curve negotiation and stability.

High wheel loads must be evaluated for their effects on rail and on structures such as bridges. Under heavy cars high bending stresses can be developed in light rails and joint bars; all rails can be adversely affected by high unit stresses in the head which may lead to shelling and, subsequently, to transverse fractures.

One solution to shelling

A low-cost alloy rail steel, not so far developed, would seem to be the best way to overcome the shelling problem, according to Code. He noted that the premium for heat-treated rail is such that it can now only be justified for curves—and shelling is also a problem in tangent track.

● **Rail-head stresses**. Often cited in the perennial argument about rail-head stresses and wheel diameter is the absence of shelling in track of the Bessemer & Lake Erie, which has for many years operated large numbers of 100-ton cars on 33-inch multiple-wear wheels. Code termed this road's experience "the exception that proves the rule," and warned that several of the recently built ore railroads which use 100-ton cars on 36-inch wheels are encountering serious rail problems.

Clearances, Code continued, are usually the only M/W problem to which there can be an immediate, uncontested answer. While tri-level auto-rack cars are requiring overhead clearances as high as 18½ feet, most railroads have successfully been providing this headroom on routes where the cars must operate. Curve negotiation with long cars is a dual problem, he explained. It usually must be considered under two conditions—with and without high drawbar forces involved.

The cooperation of the AAR research organization with several railroads encountering curving and tracking difficulties with long and heavy cars was described by the AAR's Magee. He pointed out that while the high lateral forces developed in couplers often cause the wheels of empty piggyback cars to lift clear of the outside rail on curves, derailments normally do not result from this cause. Instead, he said, the high lateral either causes the inside rail to turn over or forces flanges to climb the low rail.

He noted that immediate solutions have been to put empty piggyback cars toward the rear of trains so they will not have to transmit high drawbar pull, or to limit locomotive throttle position on troublesome curves where cars have shown a tendency to derail. A longer term solution is use of long-shank couplers which reduce coupler angling and, consequently, reduce lateral forces.

Assuring the stability of high center-of-gravity cars on North America's standard staggered rail joints is a dual problem involving equipment and track, all panelists agreed. The rolling of cars, leading to derailments, has been countered with changes in car trucks and with improvements in track maintenance. Magee pointed out that all low joints cannot be eliminated; that car trucks will have to be capable of negotiating track irregularities without setting up roll in carbodies.

Upgrading all track and structures at one time would be impossible, Magee concluded. Improvements will have to be gradual, aimed at solving specific competitive situations. He said that railroads, as transportation agencies, will have to consider two questions:

—What must be done to get or hold freight business?

—How can this freight business be handled so that it will be profitable?

Dividends Declared

ALLEGHENY & WESTERN.—Guaranteed, $3, semi-annual, payable Jan. 1 to holders of record Dec. 17.

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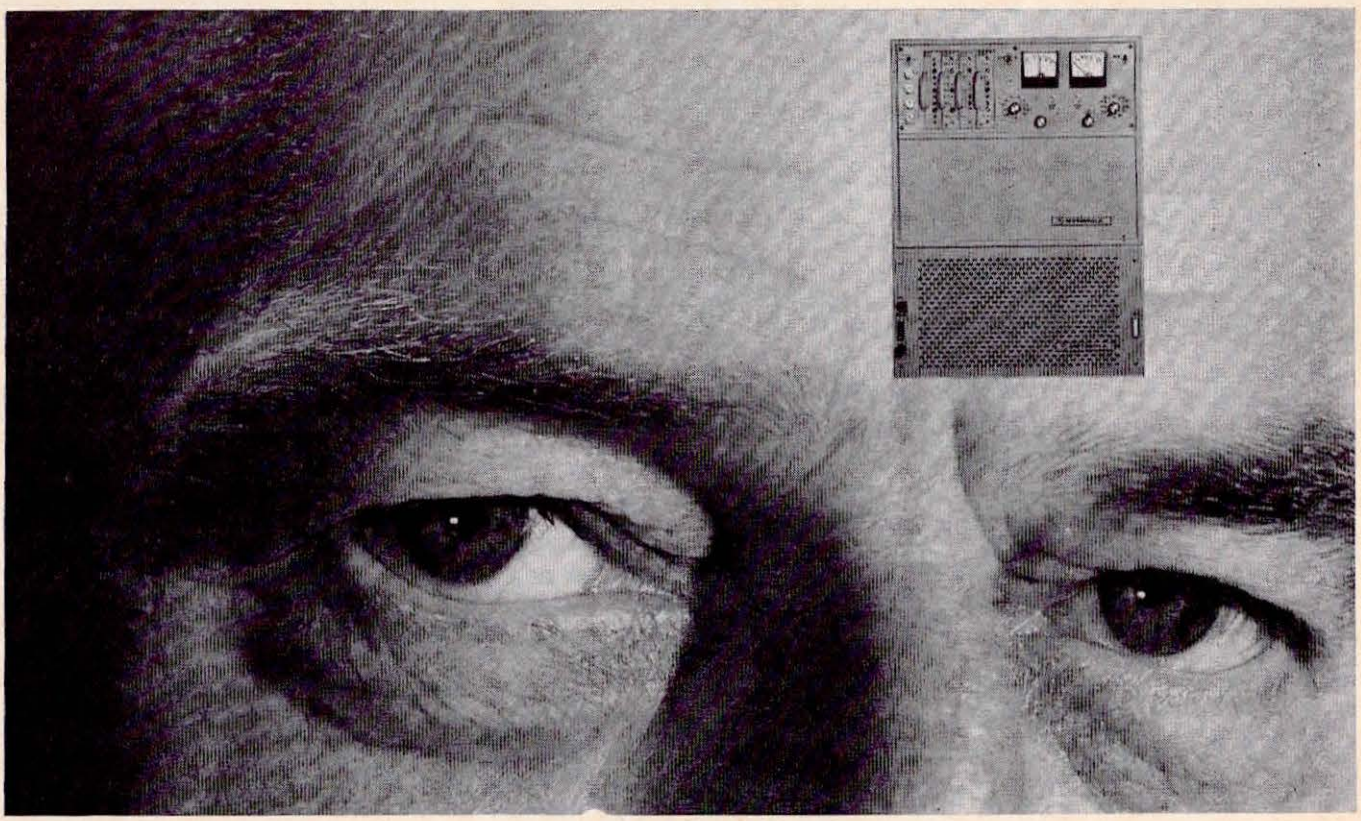

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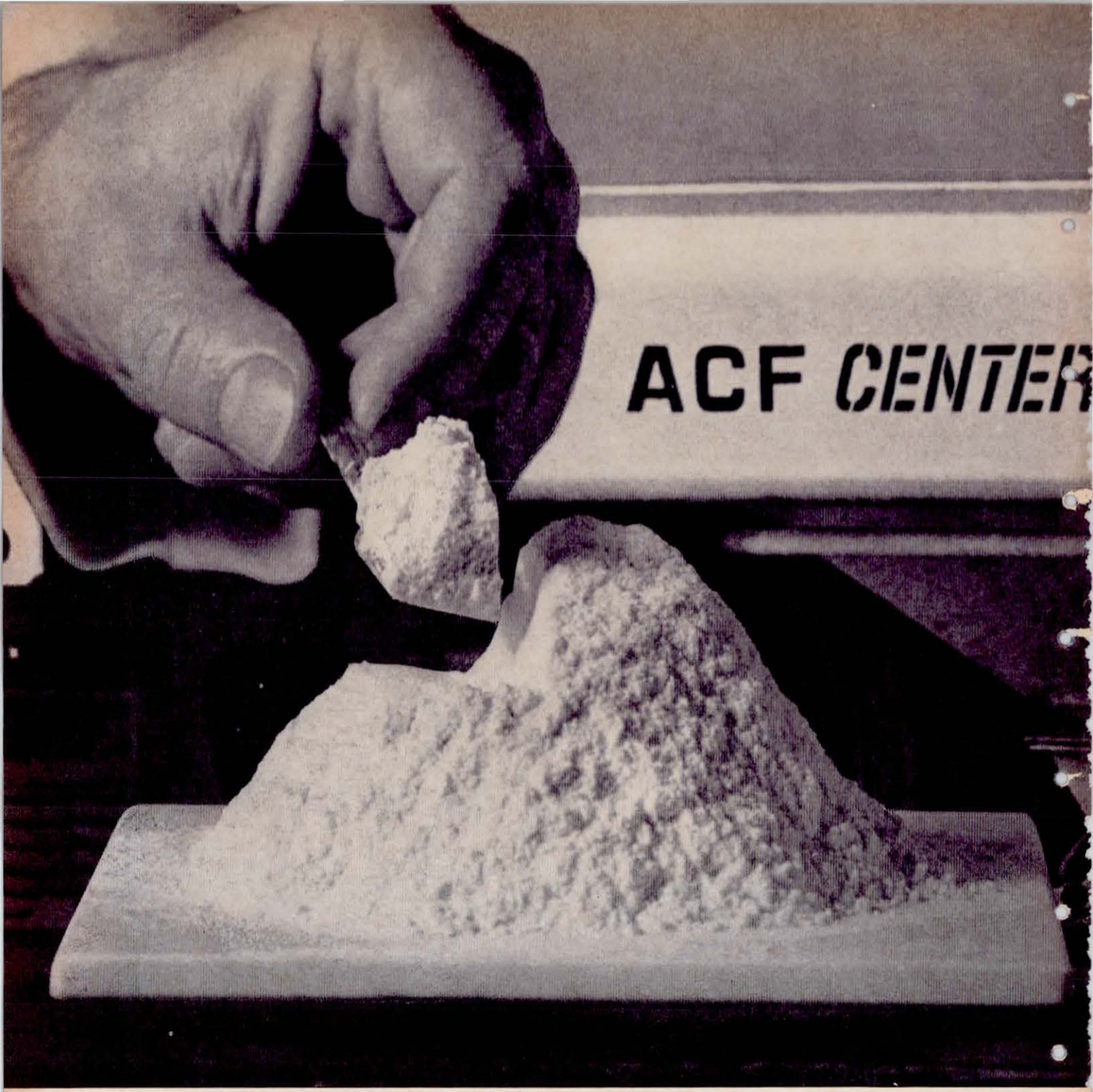

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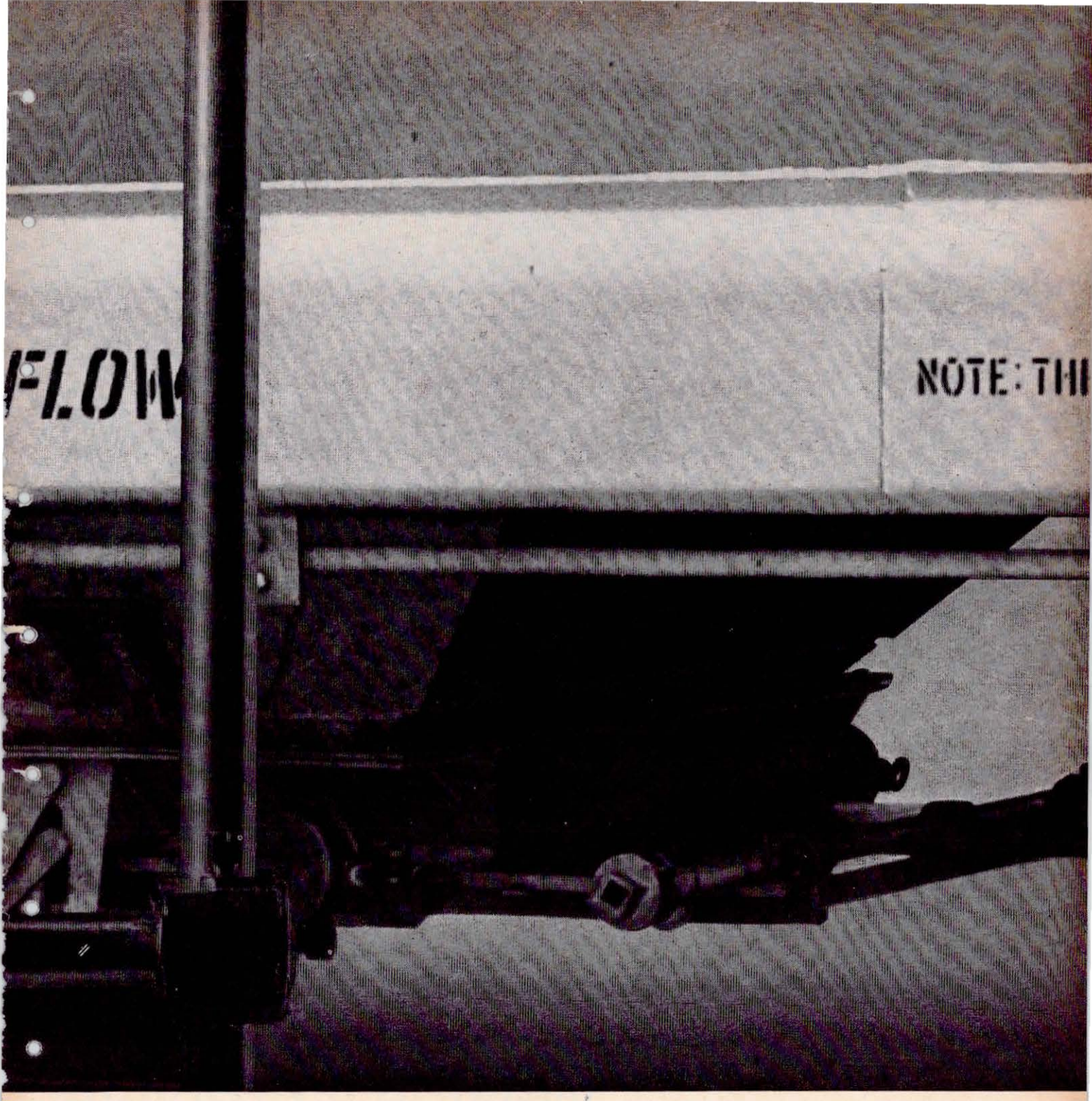

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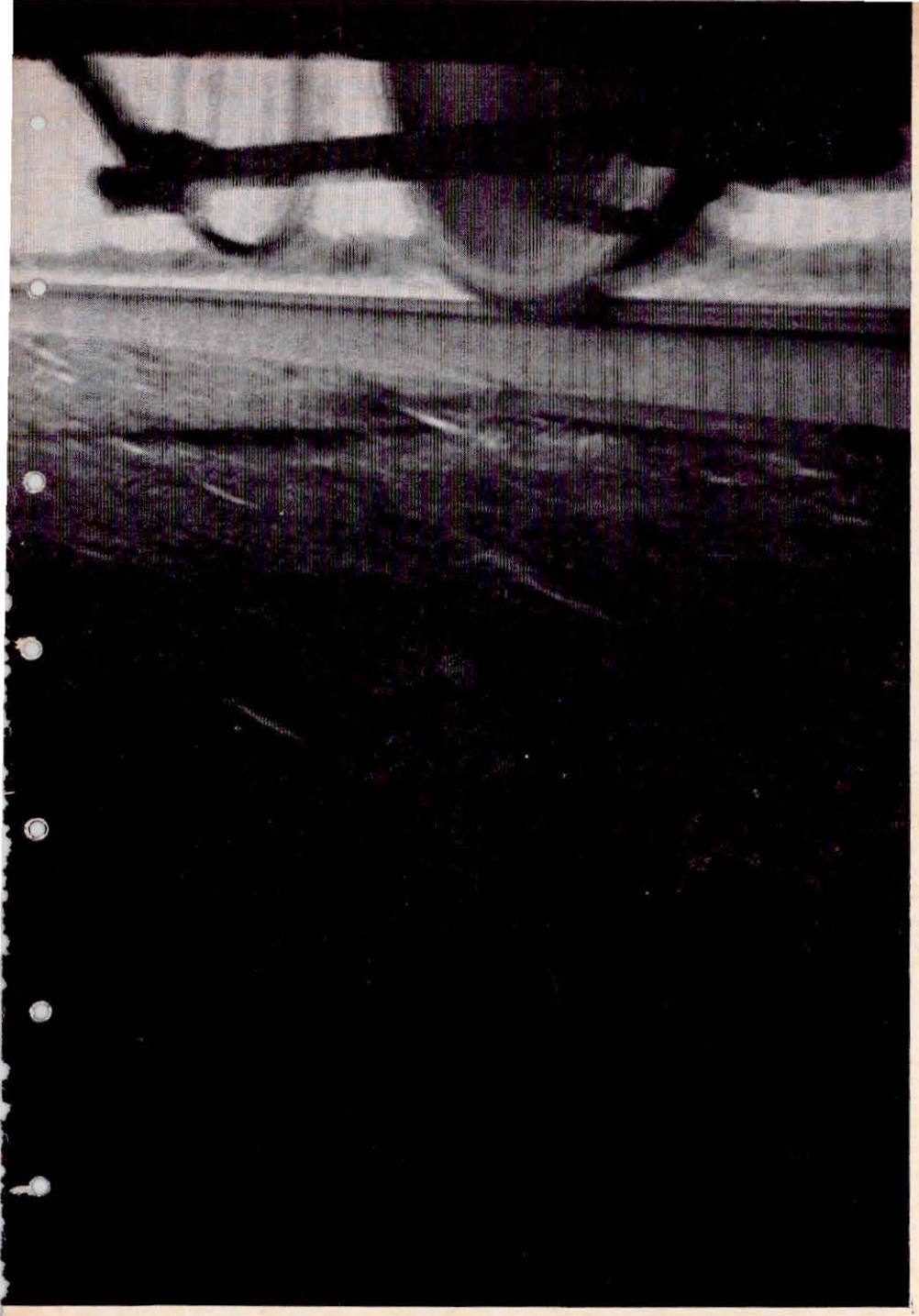


Hi-Si® rail is a solution

An economical solution, particularly on curves, grades, and where wheel loads are known to be excessive.

How can Hi-Si Rail solve the problem? It can't completely. Wear is inevitable. But Hi-Si can lengthen the useful life of curve and grade sections from 50% to 100%. Increased silicon content makes the difference in Hi-Si Steel Rail toughness. The result is to retard gauge corner shelling, metal flow in the head and abrasion.

But CF&I Hi-Si Rail makes another difference, too. Longer continuous operating life means lower maintenance, lower repair and lower labor costs. Even the initial cost of the rail is an economy when Hi-Si's greatly increased wear characteristics are considered.

Hi-Si Rail is another example of improved rail developed by CF&I in cooperation with the railroad industry. The Colorado Fuel and Iron Corporation, Denver, Colorado. D-274

CF&I STEEL

Hi-Si® is a registered trademark of The Colorado Fuel and Iron Corporation.

Circle 14 on reader service card

325 new coil cars designed with USS Family of Steels to win more business

This is the first car of a fleet of high-capacity coil cars (with 100-ton trucks) that will make it easier for steel producers to protect and ship steel coils to automotive plants and other steel coil customers.

The cars are now under construction by the Pennsylvania Railroad and are the first of this design ever built. Each will carry up to 99 tons of coils fitted snugly into six transverse troughs, protected from the elements with two-piece steel covers. By offering special cars tailored to the unusual needs of various shippers, many railroads today are able to build rail traffic and increase revenue in the face of increasing competition.

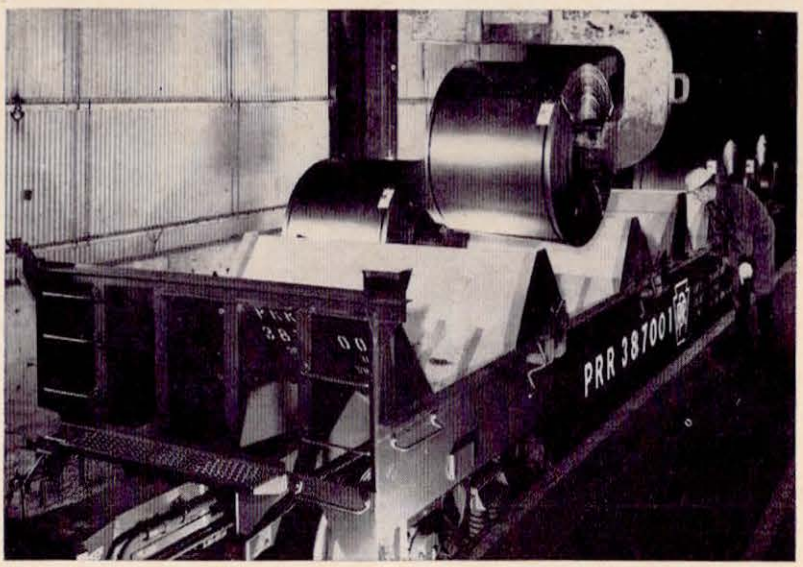
Car light weight is held to an average of 64,700 lbs. by using *four* stronger USS Steels. PRR car designers chose USS "T-1" type A Steel plates, with a minimum yield strength of 100,000 psi for sides of the car, and USS "T-1" type A bulb angles (BA 123 at 11.9 lbs./ft.) for the top and bottom side sills. This is the first use ever made of USS "T-1" type A Steel bulb angles. Weight savings per foot amount to 38%, since a carbon steel bulb angle having a weight of 19.1 lbs./ft. would probably have otherwise been used.

The center sill is fabricated from Z-26 structural shapes of USS TRI-TEN (A441) Steel, a tough, weldable steel with a 50,000 psi min. yield point. 5/16" USS COR-TEN Steel, which offers high strength (50,000 psi), and high resistance to atmospheric corrosion, is used as slope plates in the troughs. The removable special covers are also fabricated of 16-gage USS COR-TEN Steel. USS EX-TEN 50 Steel, noted for strength with economy, is used in the 3/8" trough gusset plates, reinforcement plates and trough angle posts.

The USS Family of Steels permits a designer to create special-use cars today that are lighter and more durable and offer better service than the temporary conversions that many shippers have been using. These all-new coil cars have a payload capacity of 198,000 lbs., yet their light weight averages only 64,700 lbs.

For more information on the USS Family of Steels, call the USS District Sales Office nearest you for the assistance of a technical representative, or write United States Steel, Room 8628, 525 William Penn Place, Pittsburgh, Pa. 15230. USS, "T-1," TRI-TEN, COR-TEN and EX-TEN are registered trademarks.

This mark tells you a product is made of steel

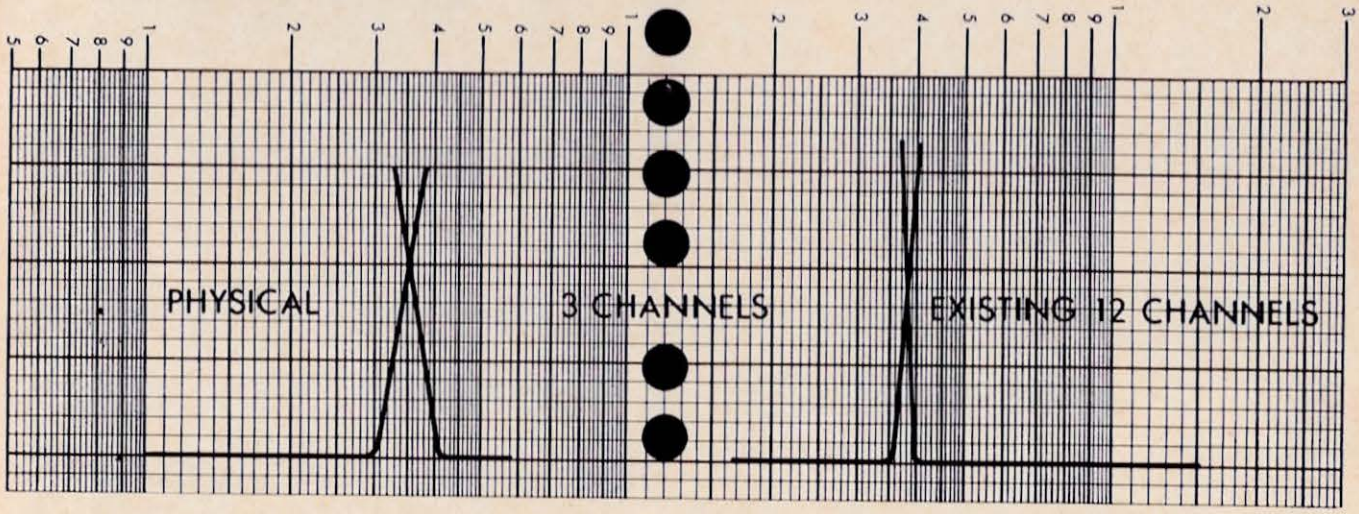


Car body is built almost entirely of USS "T-1" type A Steel and USS High-Strength Low-Alloy Steels for strength, durability and weight reduction.

USS United States Steel: where the big idea is innovation

Specially designed by PRR, G-41 car for carrying steel coils, with USS COR-TEN Steel covers for protection from the weather.

What's new here?



Stromberg-Carlson 765 Carrier System

PERFORMANCE SPECIFICATIONS

Method of Transmission	Frequency division, single sideband suppressed carrier.
Channel Capacity	1 to 4 duplex channels.
Channel Frequency Response	300-3000 cps, +1 —3 db referenced to 1000 cps.
Line Impedance	600 ohm balanced; for open wire. 135 ohm matching available for entrance cable.
Carrier Receive Level	—20 dbm nominal, —30 dbm minimum.
Carrier Transmit Level	+18 dbm, per channel.
Channel Signaling	3400 cps, either tone on or tone off during seizure.
Signaling Options	2-wire VF or 4-wire VF with E&M, ringdown by strapping.
VF Transmit Level	4-wire: —16 dbm nominal; 2-wire: 0 dbm
VF Receive Level	4-wire: +7 dbm maximum; 2-wire, —4 dbm nominal.
Ambient Temperature Range	—20 C to +50 C.
Power Source	117 volts ac. Optional 48 volts dc, or 24 volts dc.
Pilot Regulator Frequencies	East 4 kc; West 24 kc; at 0 dbm transmit level.
Line Equalization	As required to meet wire facility.

ENGINEERING ASSISTANCE: Stromberg-Carlson's transmission engineering staff will provide you with engineering and application assistance.

Technical specifications are subject to change without notice.

It's a transistorized, medium-haul, open-wire system that solves your maintenance problems and takes 75% less space than old-fashioned gear.

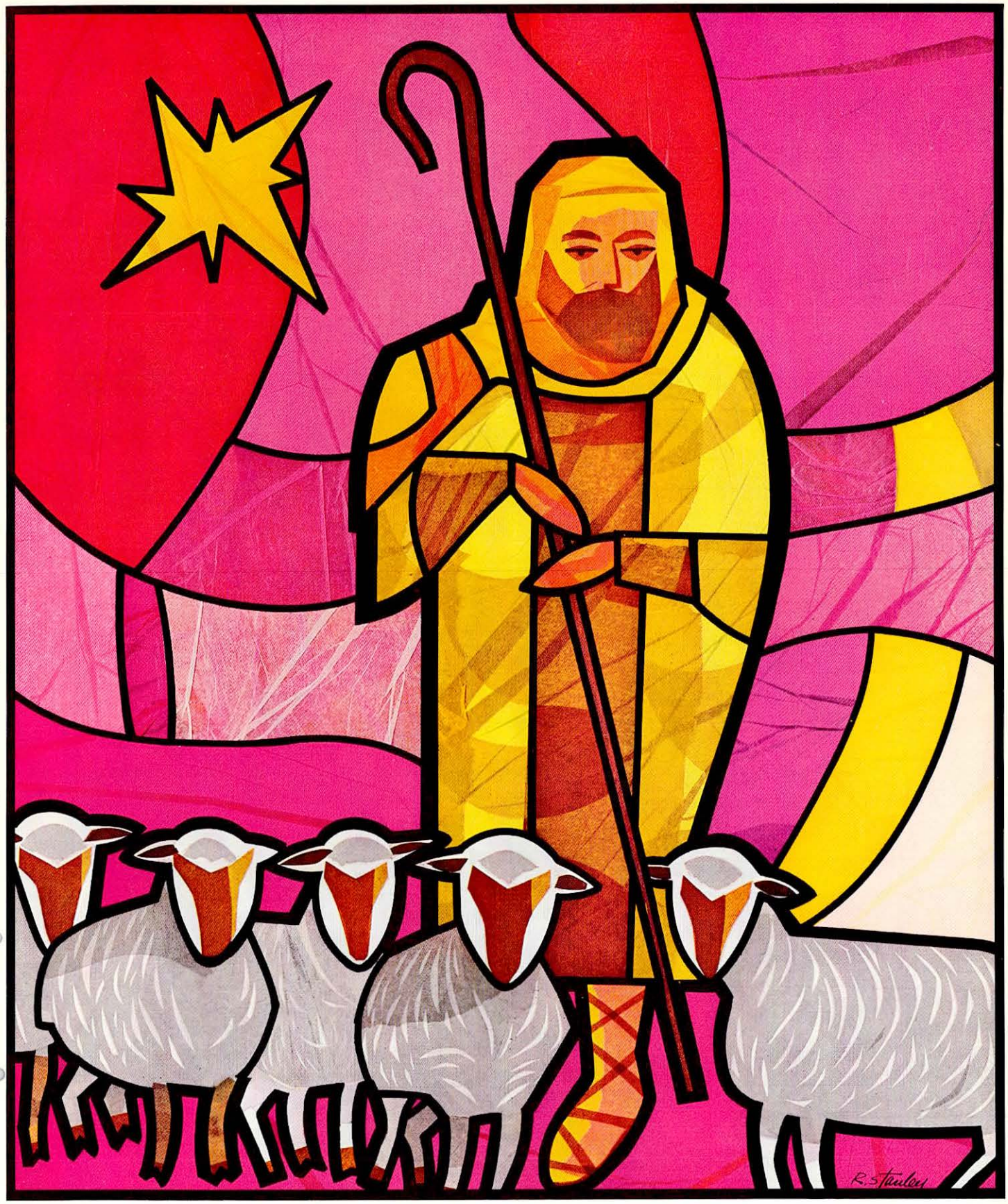
It is a direct replacement for: 501, C5, 32E, 33A, 9B1/9H2, B26A/B, etc.

For lower operating costs, replace with Stromberg-Carlson 765. For details, talk to our Industrial Sales Dept., 128 Carlson Road, Rochester, N. Y. 14603. (716) 482-2200.

STROMBERG-CARLSON CORPORATION

Circle 15 on reader service card

Circle 16 on reader service card ►



Peace on Earth, Good Will Towards Men.

W. H. MINER, INC., CHICAGO

J. P. HILTZ JR.,
President and General Manager
The Delaware and Hudson Railroad

"Reading Railway Age is, for me, by far the easiest and most satisfactory way in which to keep abreast of developments in the railroad industry and its associated fields of activity. I try not to miss a single issue and more times than not I refer a piece of information in an issue to the interested party in my organization and ask him to comment on it or discuss it with me.

"Railway Age is essential reading for anyone concerned in any way with railroads."

John C. Kohl
ATA

Ivan C. Ethington
Burlington

Quentin W. Torpin
Milwaukee

Robert E. Beck
Milwaukee

Benjamin J. Gordon
NYC

Gar-Wood N. Burwell
Rails Co.

PEOPLE IN THE NEWS

AMERICAN TRANSIT ASSN.—**John C. Kohl** appointed executive vice president of the ATA which will move its headquarters from New York to Washington, D.C. on Feb. 1. Mr. Kohl on Jan. 1 will leave his post as assistant administrator for transportation, Federal Housing & Home Finance Agency. He will succeed **George W. Anderson,** who retired from the ATA early this year (RA, Dec. 6, p. 7).

BURLINGTON.—**Ivan C. Ethington,** assistant vice president-operation, elected vice president of the operating department.

James A. Gillen named general solicitor; **Theodore C. Schuster,** general attorney; **Thomas J. Houser,** commerce counsel; **Richard J. Schreiber** and **Willard L. Peck,** assistant general attorneys.

CANADIAN NATIONAL.—**J. H. Morgan,** chief disbursements accountant, Montreal, appointed comptroller, Prairie Region, Winnipeg, Man., succeeding **W. A. Brown,** retired.

E. H. R. Eastwood appointed regional passenger sales manager, Great Lakes Region, Toronto, succeeding the late **M. E. Doke.** Abolished the position of associate regional passenger sales manager, formerly held by Mr. Eastwood.

CANADIAN PACIFIC.—**Yoshio Kawakita** appointed representative at Tokyo, for CP's rail and ocean freight interests in Japan, including the movement of bulk commodities by water.

CENTRAL OF GEORGIA.—The following appointments have been made:

At Washington, D.C.—**E. B. Shearouse,** general sales manager (former freight traffic manager there); **W. C. Bythewood, Jr.,** manager sales and rail-highway—administrative (manager rail-highway sales); **M. R. Way,** assistant general sales manager (general freight agent—sales); and **W. K. Kellaris,** assistant general sales manager (general agent, San Francisco, Calif.).

At Chicago—**J. F. McKemie,** western sales manager (former western traffic manager there).

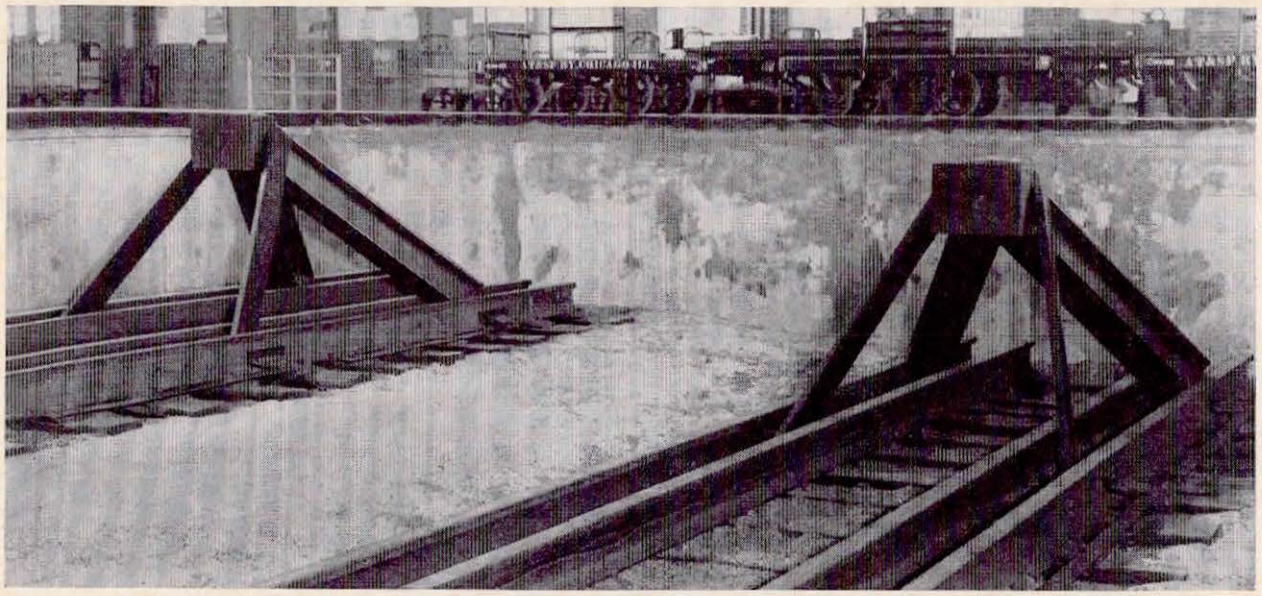
At San Francisco—**J. C. Westerfield,** general agent.

At Cincinnati, Ohio—**G. R. Gamble,** general agent (former commercial agent there).

At Birmingham, Ala.—**W. C. Hurst, Jr.,** assistant freight traffic manager, succeeding **J. B. Norman,** retired (RA, Nov. 29, p. 63).

CHESAPEAKE & OHIO—BALTIMORE & OHIO.—**J. A. Caywood,** general manager of engineer-

(*Continud on page 47*)



Can you picture any other bumping post but Type WA in this location?

No . . . and for good reason: Type WA is the strongest post ever built as a commercial product. At track ends such as these, where cars *must* be stopped, America's leading Railroads and Industries don't take chances . . . they take Type WA. When you want the utmost in track-end protection, order Hayes Type WA and the quantity you require.

Hayes Track Appliance Co., Richmond, Indiana

Circle 17 on reader service card

Circle 18 on reader service card →

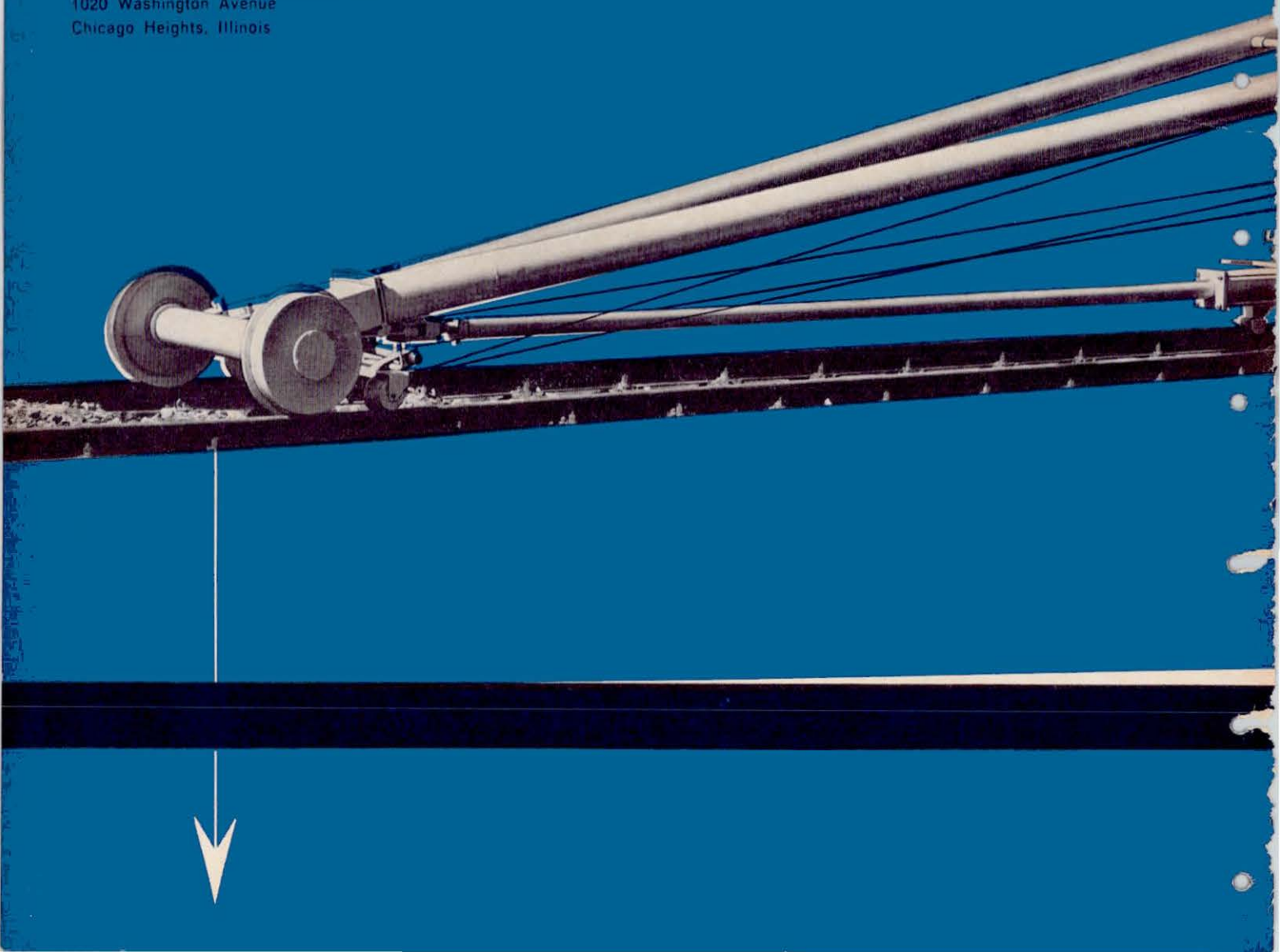
Universal automatic tamper

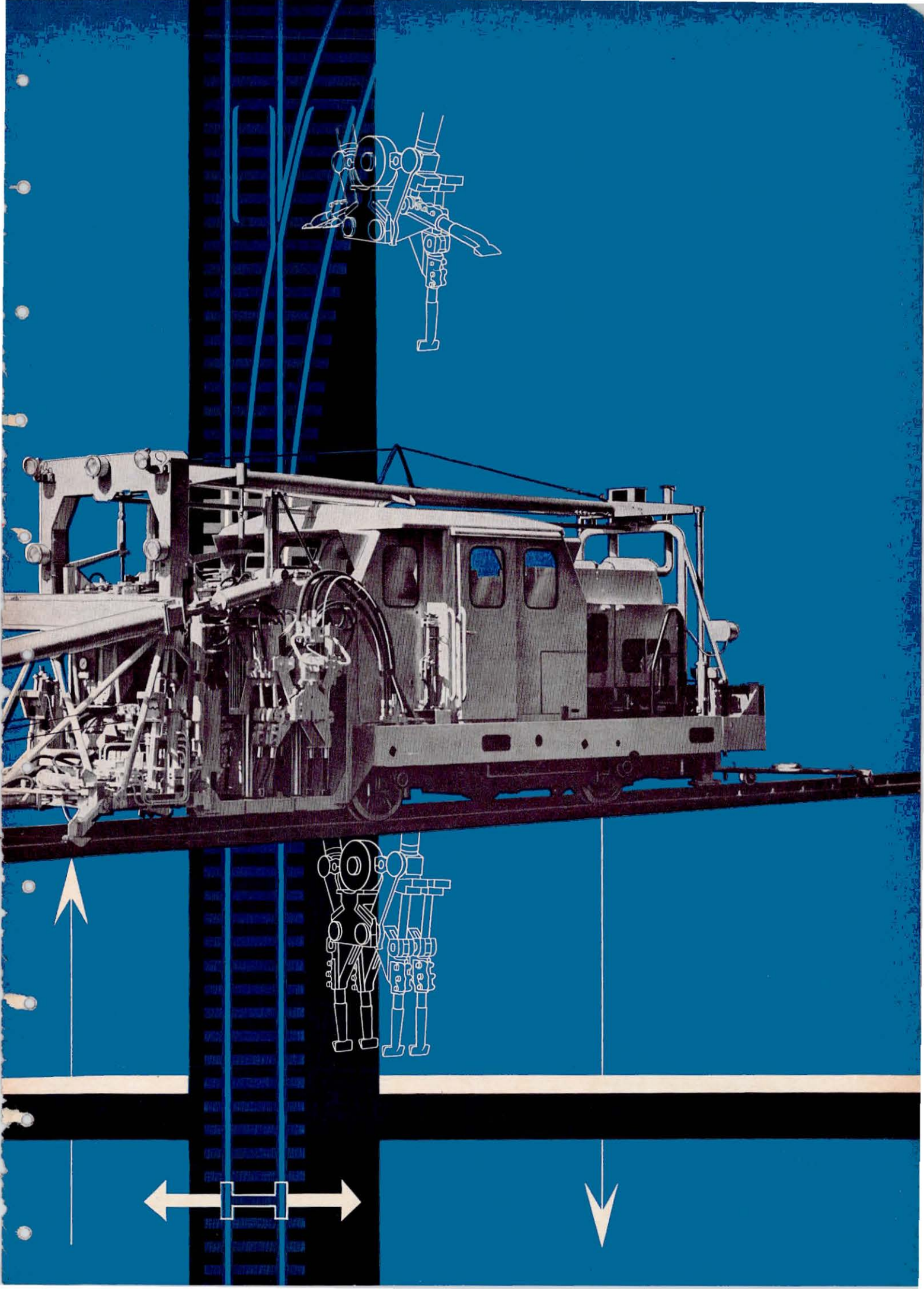
BUNRI-70

AT LAST... for all operations, a **single machine** of **unequalled power**
tamping POINTS AND CROSSINGS and **OPEN TRACK**
levelling with an accuracy of ± 1 mm with very high lifts
automatic lining of the track, whatever the radius of the curve or the cant
independent slewing of the track to fixed points
recording of the geometric features of the track

MATISA

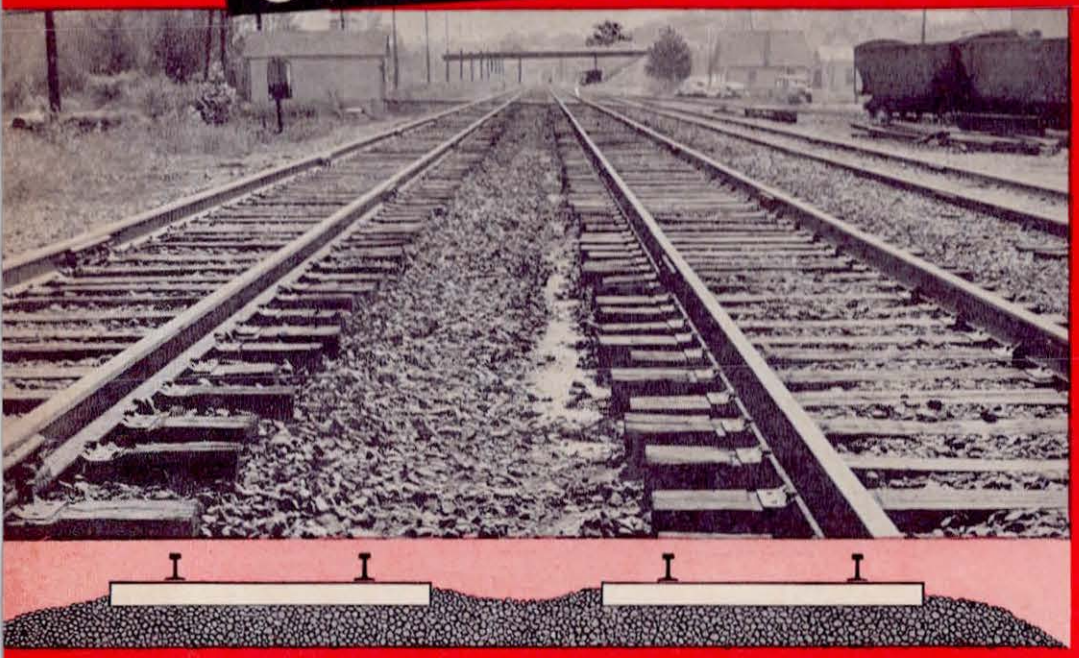
MATISA EQUIPMENT CORPORATION
1020 Washington Avenue
Chicago Heights, Illinois



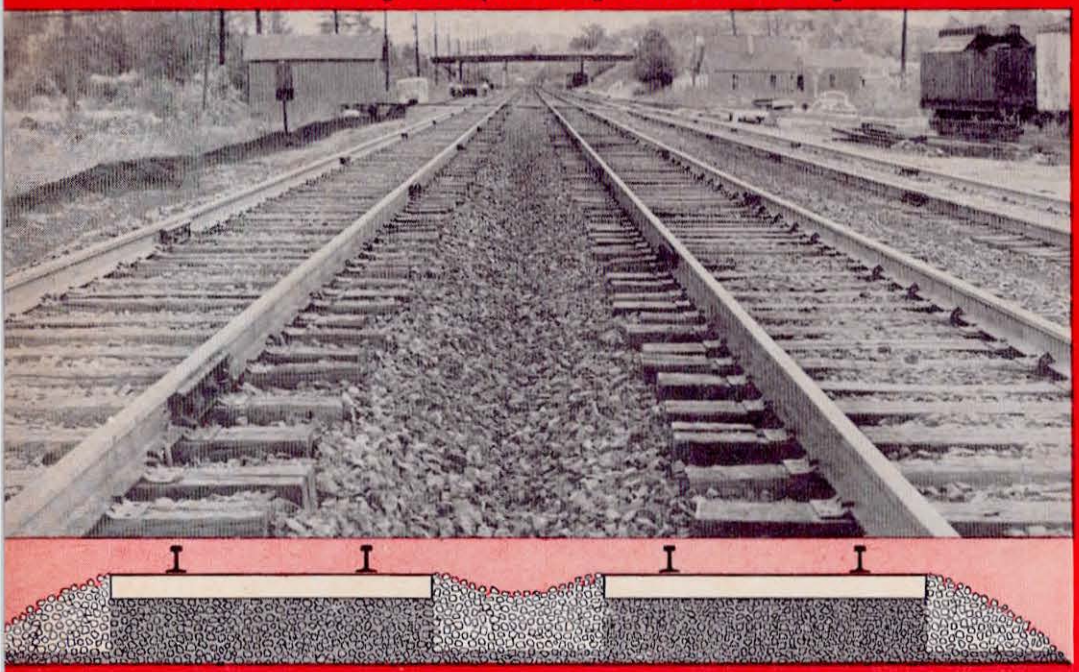


ECONOMICAL TRACK DRAINAGE

WITH SPENO Ballast Cleaning



Cross-Section showing little or poor drainage before Ballast Cleaning.

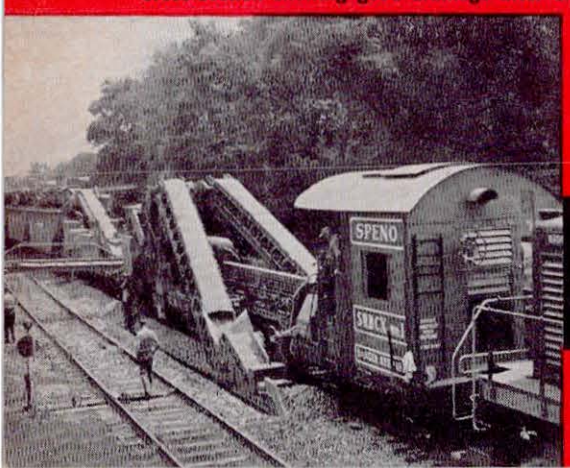


Cross-Section showing good drainage after cleaning with SPENO Ballast Cleaner.

The transformation in drainage conditions shown in these photos was accomplished with a SPENO Ballast Cleaning Machine . . . Time Tested — and Proved — Year after Year on the railroads of the Nation.

For just a few pennies per track foot you can have good track drainage that saves maintenance dollars.

Write or telephone for a Ballast Cleaning program for your railroad.



One of the SPENO Ballast Cleaning machines.

FRANK SPENO RAILROAD BALLAST CLEANING CO., INC.

Clark St., East Syracuse, N.Y. Ph. 315 437 2547

306 N. Cayuga St., Ithaca, N.Y. Ph. 607 272 3313

Canadian Sales Representatives: The Holden Co. Limited, 614 St. James St. W., Montreal 3, Quebec, Canada Phone: 514 849-8131

MARKET OUTLOOK

Carloadings

Loadings of revenue freight in the week ended Dec. 4 totaled 582,794 cars, the Association of American Railroads announced on Dec. 9. This was an increase of 62,214 cars, or 12.0%, compared with the previous week; an increase of 13,830 cars, or 2.4%, compared with the corresponding week last year; and an increase of 24,364 cars, or 4.4%, compared with the equivalent 1963 week. Ton-miles generated by carloadings in the week ended Dec. 4 are estimated at 13.9 billion, an increase of 6.8% above the corresponding week of 1964, and 12.7% above the 1963 week.

REVENUE FREIGHT CARLOADINGS
For the week ended Saturday, Dec. 4

District	1965	1964	1963
Eastern, including Allegheny and Pocahontas ..	230,587	228,716	219,647
Southern	122,683	113,354	112,517
Total Eastern and Southern Districts	353,270	342,070	332,164
Northwestern .	66,799	68,261	62,209
Central Western	121,988	121,456	125,196
Southwestern .	40,737	37,177	38,861
Total Western Districts	229,524	226,894	226,266
Total All Roads	582,794	568,964	558,430
Commodities:			
Grain and Grain products ...	58,573	49,911	54,413
Livestock	2,869	3,287	3,208
Coal	121,192	113,361	116,379
Coke	7,124	9,635	7,371
Forest Products	41,229	38,446	38,258
Ore	22,682	28,913	19,470
Merchandise l.c.l.	80,266	9,885	14,260
Miscellaneous .	321,079	315,526	305,071
Dec. 4	582,794	568,964	558,430
Nov. 27	520,580	504,131	467,073
Nov. 20	601,953	599,529	586,095
Nov. 13	604,645	618,254	588,615
Nov. 6	619,480	619,847	594,769
Cumulative total, 49 weeks	27,947,489	27,514,627	27,459,361
Estimated revenue ton-miles (billions) 49 weeks ...	658	624	590

PIGGYBACK CARLOADINGS—U.S. piggyback loadings for the week ended Nov. 27 totaled 18,171 cars, compared with 15,097 for the corresponding 1964 week. Loadings for 1965 up to Nov. 27 totaled 952,180 cars, compared with 824,019 for the corresponding period of 1964.

IN CANADA—Carloadings for the seven-day period ended Nov. 21 totaled 84,910 cars, compared with 79,578 for the previous seven-day period, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada		
Nov. 21, 1965	84,910	24,205
Nov. 21, 1964	77,805	22,192
Cumulative Totals		
Nov. 21, 1965	3,537,211	1,112,723
Nov. 21, 1964	3,532,894	1,077,990

FREIGHT-TRAIN CARS

► *Pennsylvania.*—Ordered 1,764 new cars for delivery in 1966 at a cost of $37.1 million. Hollidaysburg, Pa., shops will build 736 70-ton and 100-ton auto-parts box cars equipped with cushion underframes and roller bearings, and 500 100-ton coal hoppers. Pullman-Standard will build 467 box cars and Thrall Car will supply an additional 61, all of 86½-ft high-cube design with cushion underframes and roller bearings, also to handle auto parts.

► *Santa Fe.*—Ordered 500 100-ton, 4,500-cu-ft-capacity covered hopper cars from General American at a cost of about $7.5 million. Deliveries will begin in May 1966.

NEW FACILITIES

► *Santa Fe.*—Major projects programmed for 1966 include renewal of 200 track miles of rail in main tracks with new and heavier continuous welded rail and renewal of 58 miles in secondary and branch lines with reconditioned continuous welded rail; provision of additional car-construction facilities at Topeka, Kan.; modifications to diesel shop facilities at Argentine, Kan., and Barstow, Calif., to reduce maintenance cost and increase diesel availability; construction of new TOFC loading and unloading facilities at Clovis, N.M.; installation of 50 additional switch heaters at various interlockings; completion of a primary microwave system (now complete between Chicago and California except for the segment between Chicago and Topeka); installation of single-track TCS over 14 miles between Dalies and Isleta, N.M., and double-track TCS over 10 miles between Dalies and Belen, N.M.; purchase of additional radio equipment, and installation of 14 additional hotbox detectors.

CAPITAL EXPENDITURES

► *Chesapeake & Ohio-Baltimore & Ohio.*—Will spend a combined total of $175 million in 1966 on capital improvements. No breakdown has been announced.

► *Delaware & Hudson.*—Will spend $6.5 million on capital improvements in 1966. Included is purchase of 200 50½-ft, 70-ton box cars equipped with roller bearings, cushion underframes and automatic slack adjusters, at a cost of $3,052,000; 125 100-ton, roller-bearing ore cars costing $1,641,250; and six bulkhead flats equipped with chain tiedowns, roller bearings and cushioning for use in lumber movements. Roadway improvements will include installation of 20 miles of new welded rail and 11 miles of new rail on branches and in yards, at a cost of $175,670. A total of $342,690 will be spent on signals and interlocking equipment. Other items in the budget: Improvements to bridges, trestles and culverts, $200,708; roadway machinery and tools, $253,502; communication systems, $47,772; shop buildings, $86,792; shop machinery and tools, $14,014; miscellaneous, $329,940.

► *Santa Fe.*—Capital expenditures in 1966 will total approximately $145 million and will include acquisition of more than 5,000 new freight cars and 60 road diesel-electric locomotives. On a consolidated basis including controlled subsidiaries, Santa Fe capital spending this year will hit a record high of $155 million, with the major part of the expenditure going for 5,900 new freight cars and 111 locomotives.

▲ Circle 19 on reader service card

YOU OUGHT TO KNOW

New REA terminal for Detroit: REA Express will build a $3-million, 160,000-square-foot terminal on an 11-acre site at the southwest corner of 20th Street and Michigan Avenue, Detroit. Scheduled for completion early in 1967, the new Detroit Express Terminal will consolidate operations now conducted at six different locations.

GTW rides the auto boom: A record year in the automobile industry and the generally buoyant economy of Michigan are making 1965 a good year for Grand Trunk Western. Revenue freight tonnage was up 12.5% for the first nine months of '65 compared to the same period in 1964; bi-level and tri-level auto shipments were up almost one-third. And, says Vice President and General Manager Harry A. Sanders, GTW operating revenues for the full year are expected to be up 12.5%—which would make 1965 "the highest year of record."

T&P joins the fight: Merger of Union Pacific and Rock Island and sale of part of RI to Southern Pacific got a new foe last week—Texas & Pacific. T&P's parent, Missouri Pacific, had intervened earlier, but T&P says its concern in preserving the operation of T&P and SP as "one continuous line through the El Paso gateway is so uniquely that of this company and so vital to its existence alone" that the separate protest is required in the interest of the minority stockholders. T&P directors empowered the carrier's officers to take all steps necessary to fight the UP-RI-SP proposal.

C&O's empty stocking: Chesapeake & Ohio has received what it calls a "reverse Christmas present" from the Post Office Department with notice that all mail will be withdrawn from C&O trains 46 and 47 starting Jan. 3, 1966. The trains operate between Ashland, Ky., via Columbus and Toledo, Ohio, to Detroit. Paul H. Reistrup, C&O-B&O director of passenger services, points out that the removal of the mail means a loss of $170,000. He recalls a similar loss last August in Virginia and West Virginia when removal of mail cost $700,000 in revenue. Mail constitutes 40% of passenger revenue for C&O-B&O. Reistrup reports the Post Office Department was "adamant in wanting to divert service" when a suggestion for schedule changes was made. In 1964 the roads lost $10 million on passenger operations.

Jobs in jeopardy? A move to transfer the New York State Barge Canal System to the federal government—in the expectation that Washington will invest heavily in modernizing the system—is running into heavy weather. Railroad labor has now added its own opposition to that of railroad management. Francis B. Boardman, chairman of the New York State Legislative Board, Brotherhood of Locomotive Firemen & Enginemen, told a hearing at Buffalo last week that the sinking of federal money in the canal system would jeopardize thousands of railroad jobs, "We object strenuously," said Boardman, "when another mode of public transportation is seeking a financial advantage at the expense of the taxpayers to the detriment of the railroad industry and railroad labor."

August-October fines: Fines totaling $133,150 were paid in the three months from Aug. 1 through Oct. 31 by 64 railroads for violations of the Safety Appliance, Hours of Service and Explosives and Combustibles acts. Biggest payers, according to the ICC, were: Missouri Pacific, $10,250; Southern Pacific, $8,750; Pennsylvania, $7,750; Baltimore & Ohio, $7,400; Northern Pacific and Great Northern, $5,750 each.

Millionth trailer for CP: On Nov. 29, the Canadian Pacific loaded its millionth trailer for piggyback movement. No. 1,000,000 was backed onto a flat car at the railroad's Lachine terminal just a little more than eight years after TOFC service was inaugurated in October 1957.

Truck tonnage: Intercity truck tonnage in the week ended Nov. 27 was 16.4% below that of the previous week, but 4.9% ahead of the volume in the corresponding week of 1964, according to American Trucking Associations.

Current statistics

Net income	
9 mos., 1965	$540,000,000
9 mos., 1964	500,000,000
Carloadings, revenue freight	
49 wks., 1965	27,947,489
49 wks., 1964	27,514,627
Freight cars on order	
Nov. 1, 1965	41,612
Nov. 1, 1964	30,351
Freight cars delivered	
10 mos., 1965	65,939
10 mos., 1964	56,564
Serviceable cars	
Nov. 1, 1965	1,402,607
Nov. 1, 1964	1,404,590

(*Continued from page 41*)

ing planning, has left the C&O-B&O to join De Leuw, Cather & Company as a vice president, effective Dec. 1.

W. L. Jenkins appointed staff assistant—administration, C&O-B&O, Huntington, W. Va.

MILWAUKEE ROAD.—Quentin W. Torpin, superintendent of transportation, Chicago, appointed general superintendent of transportation there. Mr. Torpin's successor is **Robert E. Beck,** superintendent of diesel utilization, Chicago.

NEW YORK CENTRAL.—Benjamin J. Gordon, district engineer, Western District, Cleveland, Ohio, appointed engineer—maintenance of way—system, New York.

NORFOLK & WESTERN.—William L. Bailes, Jr., assistant vice president—coal traffic, Roanoke, elected vice president—coal traffic and development, succeeding **C. P. Blair,** who retired Nov. 30, after 42 years with the N&W. **Lawrence T. Forbes,** manager—export coal, New York, appointed director of export coal traffic, and **Thomas C. Hamill,** manager—inland coal, Roanoke, named director of domestic coal traffic, both new positions.

Leighman E. Hawkins, chief clerk to assistant vice president—rates, named assistant freight traffic manager—rates, Roanoke, succeeding **Lawrence E. Brett,** retired after 44 years. **Rodney L. Brown,** commercial agent, appointed assistant manager—special rate and route services. **James J. Connor,** named sales representative—piggyback, Philadelphia.

Howard Odom, trainmaster, Chicago division, Fort Wayne, Ind., promoted to assistant to general manager, Lake region, Cleveland, succeeding **Melvin J. Bickel,** granted leave to become assistant general manager, **Toledo Terminal,** which is owned jointly by the lines serving that city.

ROCK ISLAND.—Henry J. Koukal, assistant general manager-freight sales, Chicago, will supervise a new division within the freight sales department to increase fruit and vegetable traffic. **James O'Neill** named manager of perishable sales, Chicago. **Kenneth H. Hoppe** and **Lawrence J. West** appointed district managers-perishable sales, El Centro and Salinas, Calif., respectively. **Walter D. Gifford** named district manager-perishable sales, New York. **Harry P. McLenighan** continues as district manager-perishable sales, Chicago. **Val M. Conley** named assistant regional manager-freight sales; **George L. Marklein,** district manager-freight sales; **Richard R. Farrell,** manager-service and schedules; **John V. Stewart,** assistant to assistant general manager-freight sales, and **Robert E. Benson,** sales planning analyst, all at Chicago. **Harvey C. Powers,** freight sales representative, Joliet, Ill., succeeds Mr. Stewart as district manager-freight sales there. **Robert W. Knight,** district manager-freight sales, Amarillo, Tex., transferred to Pittsburgh, succeeding Mr. Marklein. **Herbert E. Lewis,** freight sales representative, Amarillo, replaces Mr. Knight. **Robert A. Strong,** district manager-freight sales, Colorado Springs, Colo., transferred to Peoria, Ill., to replace **Joseph A. Howe,** resigned. Mr. Strong's successor is **Ray M. Snelson,** who transferred from Buffalo, N. Y. **Robert L. Ferguson,** freight sales representative, Nashville, Tenn., succeeds Mr. Snelson. **Arthur S. Pond, Jr.,** district manager-freight sales, Lincoln, Neb., transferred to Cincinnati, replacing **William H. Person,** transferred to Houston. Mr. Person replaces **William B. Futral,** retired. Mr. Pond's successor is **Gerald D. Renfro,** freight sales representative, Kansas City, Mo.

Supply Trade

Gar-Wood N. Burwell, secretary and vice president, **The Rails Co.,** Maplewood, N.J., has been elected president, succeeding his father, the late **Lester T. Burwell.**

Frank W. Billmire, manager of railroad sales, **Paslode Division, Signode Corp.,** has been named sales manager.

The Transportation Equipment Division, **Evans Products Co.,** Plymouth, Mich., has announced new appointments.

Reporting on rail equipment to **J. R. Byrne,** recently appointed general manager of transportation damage-prevention equipment are: **R. K. Robin,** director of sales; **G. M. Schueder,** director of engineering; **C. F. Vosburg,** director of manufacturing; and **E. Ostroski,** assistant to general manager.

Reporting on the railcar operation to **G. H. Deska,** recently appointed general manager of railway car-building are: **R. E. Bell,** director of sales; **J. R. Bennett,** director of engineering; **R. E. Mills,** director of manufacturing; **W. R. Green,** director of planning; and **C. Gross,** assistant to general manager.

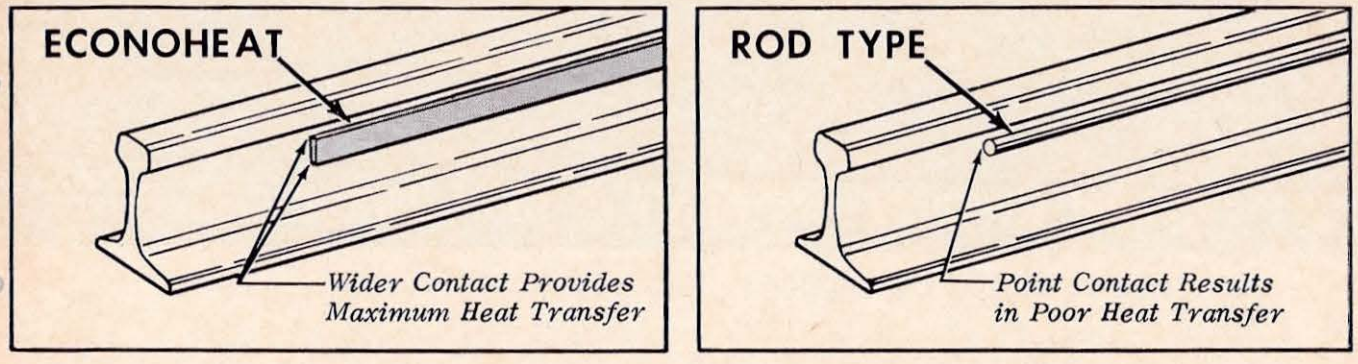
OBITUARY

William N. Deramus, 77, board chairman, **Kansas City Southern,** died recently at Kansas City, Mo.

William C. Wallace, 60, auditor of freight accounts, **Chicago & North Western,** died Dec. 1 in Passavant Hospital, Chicago.

ECONOHEAT®

BONDED SILICONE RUBBER SWITCH HEATERS



ECONOHEAT FEATURES

- ENERGY CHARGE IS LESS THAN ONE-HALF THAT OF ROD TYPE HEATERS IN THE SAME NUMBER OF OPERATING HOURS.
- DEMAND CHARGE IS LESS THAN ONE-HALF THAT OF ROD TYPE HEATERS.
- EXTENDED LIFE.
- ALL HEAT APPLIED DIRECTLY TO THE RAIL.
- EQUAL HEAT DISTRIBUTION OVER ENTIRE SWITCH.
- NO ADVERSE EFFECTS TO THE THERMO CYCLING.
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THE ACTION PAGE

The need for realistic M/W programs

In the early days of the industry it didn't take railroad managements long to learn that the track-maintenance department could be mighty useful in helping to prop up net earnings during times when carloadings were pointing downward.

A railroad might start the year with normal programs of rail and tie renewals. But its maintenance officers knew from experience that these could be interrupted at any time. Let a cloud appear on the business horizon and weatherwise M/W officers could tell it would only be a matter of time until the word would come down the line to cut off some or even all of the gangs that were putting in the ties and rail or doing other work. And they could usually forecast the extent of the cutbacks by the size and blackness of the cloud.

As a financial gambit this policy had its strong points. There were years when its application kept many railroads from going into the red and others from cutting their dividend payments. Here and there it may even have saved railroads from bankruptcy, at least temporarily. And the beauty of it was that these benefits could be had without any immediate bad effects on service and apparently without serious drawbacks of any kind. The work programs that were cut back could be reinstated in the following year or the year after that, so what was lost?

But a gradual change began to take place in management's attitude toward the policy of treating M/W programs as at least partly expendable. Basically, the change came about as a result of the growing realization that a stiff price was being paid for the benefits which were largely short-lived and illusory anyway. The price: Inefficiency and extra costs, including start-up expenses, resulting when programmed work is interrupted in midseason and perhaps reinstated later on.

The effect of mechanization

The evidence of this inefficiency became even more glaring as track work became highly mechanized. This evidence, in the form of costly track machinery standing idle on sidings or setoffs, could be plainly seen from the observation lounges of business cars carrying management personnel over the railroad. Local supervisory officers, when asked why the machines were not at work earning a return on the investment, could not be blamed if they experienced a small degree of satisfaction in explaining that the idleness was a result of retrenchment orders sent out from the front office.

A new order now prevails, at least on many railroads. The benefits of long-range programming of maintenance work are now generally recognized and the practice seems to be to go slow in ordering cutbacks in programmed work except possibly during extreme fluctuations in business.

M/W operations have thus been placed on a more secure, systematic and efficient basis than ever before. In replacing the former stop-and-go approach with a system that takes into account the virtues of continuity, the railroad industry has taken a long step forward.

This would be a happy report if it were possible to end it on this positive note. But that is not the case. For there seems to be a notion among at least some M/W officers that their operations are still regarded mainly for the contribution they can make in helping to produce a creditable earnings statement. It is not that they argue with the premise that their department, whose operations result in money going out and none coming in, should be conducted in accordance with the principles of maximum economy and efficiency. Their argument is with any tendency to carry this approach too far, to the point where it becomes difficult or impossible to maintain the properties adequately.

Management's two attitudes

M/W officers on roads where this tendency prevails are convinced they can see a difference in the attitudes of their managements between proposed expenditures that produce a return on the investment and those that don't. One man, for instance, said he didn't have any difficulty getting authority to purchase maintenance machines because it was easy to demonstrate that such machines will produce a return on the investment. But authority to buy new ties or rails comes harder, a situation which he ascribes to the fact that these purchases are strictly expense items and don't produce any direct savings to the railroad. His point, of course, is that requests for authority to purchase track materials should be weighed strictly on the basis of the need for them.

This situation may or may not apply generally, but the fact is that railroads appear to be holding M/W expenditures in a rigid mold. A conclusion like this seems to be in order from a study of what is happening to the maintenance-of-way ratio, which is the ratio of maintenance of way and structures expenditures to operating revenues. The M/W ratio for Class I railroads has been going down steadily for a decade or more.

When looked at from one point of view the downward trend of the M/W ratio can be interpreted as a victory for the maintenance forces in their battle against burgeoning wage rates and prices for materials. To make economic sense, however, this interpretation would have to assume that enough materials and labor were being put into the properties to bring them up to the standards required—and to keep them there.

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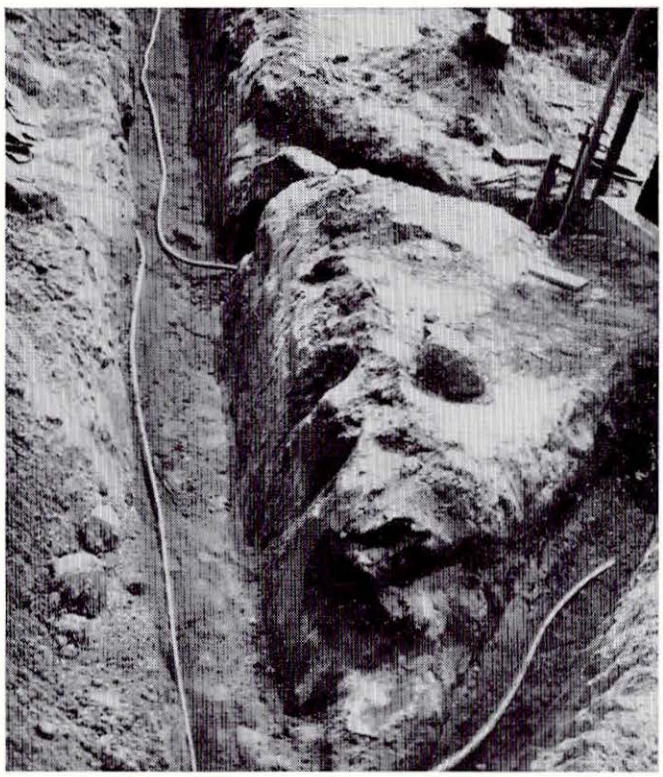

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